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HEALTH CARE STUDIES AND
CLINICAL INVESTIGATION ACTIVITY

EVALUATION OF A CONSTRAINED FACET ANALYSIS EFFICIENCY MODEL FOR IDENTIFYING THE EFFICIENCY OF MEDICAL TREATMENT FACILITIES IN THE ARMY MEDICAL DEPARTMENT

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The Constrained Facet Analysis (CFA) Efficiency Model is a prototype system used to compare the relative efficiencies among non-homogeneous input and output Decision-Making Units (DMUs). A working microcomputer-based CFA model called the Productivity Analysis Support System (PASS) was developed at the University of Texas at Austin by Drs. Bessent, Bessent, and Elam. Using retrospective AMEDD data from a set of 25 hospitals for FY85 through FY87, this model was exercised to evaluate the ability of PASS to identify efficient and inefficient hospitals within a variety selected datasets of 18 test groups. Only one of the test groups provided complete information that satisfied the constraints of the model, identifying 11 efficient and 14 inefficient hospitals from a test dataset for FY87. Further evaluation by experts will be necessary to validate the appropriateness data elements used in this model and results obtained from PASS.

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CHAPTER I

INTRODUCTION

A continuing concern of escalating health care costs both in the private and public sectors has prompted federal government action through programs, such as MEDICARE's diagnosis-related groups (DRGs) prospective reimbursements.[1] By limiting payments to the hospital, MEDICARE and other reimbursement organizations have attempted to limit health care costs, forcing health care facilities to review their methods of delivering efficient health care.

Within the Army Medical Department (AMEDD), the Medical Care Composite Unit (MCCU) and more recently, the Health Care Unit (HCU), have been used to furnish patient care workload data, in accounting for consumption of resources within each Medical Treatment Facility (MTF). These data are used to measure system performance in justifying resources for specific programs to Congress.[2] Unlike the DRG measurements, neither the MCCU nor the HCU reflect DRG-based case mix measures in describing case complexity and resource utilization. The inadequacy of the MCCU and the HCU has caused the Army Surgeon General to direct a study to "evaluate current measures of AMEDD health care system performance and, as required, develop better measures and workload data capture systems which accurately reflect actual resource utilization".[3] The Tri-Service Performance Measurement Working Group, formed to study such resource allocation issues within Department of

Defense (DOD) MTFs, has examined workload measures for both the inpatient and ambulatory care environments. One of their study study efforts has addressed the ongoing development of a military hospital DRG measurement. Development of a military DRG is an attempt to determine the parameters for evaluating hospital efficiency and productivity by identifying those unique AMEDD/DOD variables associated with military health care delivery.

Concerns of escalating expenditures and costs in DOD MTFs, coupled with the development of a military DRG, similar to civilian sector DRGs, will have a major impact on the delivery of care and the operation of the DOD facilities. Comparisons of the efficiency and effectiveness of similar MTFs in the DOD health care delivery system will be necessary to more effectively allocate resources, particularly in light of recent government cost cutting measures, such as the Gramm-Rudman spending bill reductions.

Conditions Which Prompted the Study

Various analytical techniques and models to analyze efficiency have been used to provide a basis to identify and compare efficient and inefficient units among units with similar inputs and outputs. Many of these techniques can only estimate or analyze a single output (dependent variable), thus forcing analysis for units, such as hospitals, that have multiple input and multiple output dimensions, to develop a single surrogate output variable that would identify all outputs. Better

analytical tools to assess these complex units are needed to fully describe efficient and inefficient units.

Statement of the Research Problem

Evaluate the usefulness of the Constrained Facet Analysis (CFA)/Data Envelopment Analysis (DEA) model as a mechanism for identifying the efficiency of producing units in the Army Health Care Delivery System.

Objectives

The objectives of this research were to:

1. Review current literature concerning the methodologies and application of the DEA and CFA processes.

2. Explore the Productivity Analysis Support System (PASS) CFA/DEA model as developed by Bessent/Bessent/Elam at the University of Texas at Austin.

3. Identify an appropriate set of retrospective production data for potential use in the model.

4. Test the PASS instrument using a retrospective AMEDD dataset.

5. Evaluate PASS output products to determine usefulness and potential future application.

Criteria

The criteria for this research include the following:

1. Data to be used in the model must satisfy the constraints of the model:

a. The total number of input and output data elements selected cannot exceed the total number of units being evaluated.

b. The input and output elements must have positive production rates; as input (resources) is increased, the output (products or services) will increase.

c. Negative substitution rates should exist within both the input and the output elements.

2. A complete set of selected data must exist for each unit being evaluated and must be available for use.

Assumption

For the purposes of this research, it was assumed that:

1. All inputs and outputs for the evaluated health care unit are quantifiable, directly or through some form of weighted averages and are available from existing data.

2. The methodology for analysis of appropriate inputs and outputs can be applied within any organizational health care unit.

3. The PASS modeling instrument is available for evaluation and the cost to obtain PASS is within cost constraints.

Limitations

1. An understanding of the CFA modeling technique and the PASS methodology, their limitations and idiosyncrasies will be necessary to correctly formulate the input and output criteria and to interpret the efficiency results. This support should be available from the appropriate expert resources when necessary.

2. This study will be conducted using available retrospective data. This approach may limit the utility of the study; however, the proof of concept of this methodology is paramount to further research in developing practical applications.

Research Methodology

The methodology used to conduct this research included the following:

1. A study of the DEA/CFA processes and applications was carried out by reviewing the literature. Findings from this research led to the discovery of a viable CFA instrument that could be applied using microcomputer-based tools. The Productivity Analysis Support System (PASS) was obtained through Health Care Studies and Clinical Investigation Activity at a cost of $5,000.

2. Sample data was applied from previous literature presentations to test the operation of the instrument. Flaws in a number of modules in the PASS model required coordination with the

authors to rectify. In time, the PASS model produced similar results as those presented in previous DEA/CFA processes.

3. To better understand the PASS instrument, a seminar conducted at the University of Texas in Austin was attended. Additional information was obtained from Dr. Athena Bessent and preliminary work began in developing an AMEDD set of data to be applied against the model.

4. Retrospective data was gathered from a number of activities at Health Services Command (HSC). HSC Resource Management provided the Medical Expense Performance Reporting System (MEPRS) and cost information, HSC Training and Education provided the information regarding physician training programs, and the HSC Patient Administration Systems and Biostatistics Activity (PASBA) provided the biometrics data regarding patient care parameters. Data in each area was gathered for 25 AMEDD health care facilities for fiscal years 1985, 1986, and 1987.

5. Potential health care service units (categories) for evaluation and selection of an appropriate service unit or a subset of that unit was analyzed.

6. The database was built to meet the constructs of the PASS model.

7. Selection of a variety of input and output measurements were exercised by the PASS instrument.

8. Outcomes were evaluated from each trial run. Final results and recommendations are reported.

ENDNOTES

[1] R. H. Egdahl, "Ways For Surgeons to Increase the Efficiency of Their Use of Hospitals," The New England Journal of Medicine, Volume 309 No. 19, November 10, 1983, pp. 1184-1187.

[2] J. A. Coventry, "The AMEDD Performance Measurement Study," Proceedings of the Performance Measurement Conference, Report #84-002, October 1984, pp. 137-155.

[3] Ibid.

CHAPTER II

LITERATURE REVIEW

Measuring Hospital Efficiency

There are numerous approaches to identify and measure hospital inefficiencies, forming the basis for managerial action to improve hospital operating efficiency and reduce costs. Viewing efficiency from the perspective of the using resources (supplies, personnel, equipment) to provide service (patient care, teaching, research) can be referred to as technical efficiency, similar to concepts used in physics, engineering, and pareto-efficiency in economics.[1] A hospital is thus defined to be inefficient if it could have produced the same amount and quality of patient care and other outputs with fewer resources than it consumed or if it could have produced greater amounts of its outputs with the same amount of resources it used.[2] Various techniques such as a ratio analysis and econometric regression analysis have been used in evaluating hospital efficiency.[3] The first of these methods can be used to analyze multiple output-multiple input relations among comparable groups of hospitals using ratio comparisons between the various input and output criteria. An example in the use of these ratios is the Monitrend Report of the American Hospital Association which includes 170 ratios for various input and output relationships relating to the total

hospital and individual departments.[4] Although this technique can analyze multiple inputs and outputs, ratio analysis can only relate one input to one output at a time and does not provide possible interactions among variables.

The econometric regression techniques can be used to estimate hospital cost relationships and production relationships.[5] Although there are numerous examples of this type of study,[6] Feldstein's study of hospitals,[7] reflects many of the more traditional approaches using econometric-regression techniques. These approaches attempt to estimate marginal cost per patient, the breakdown of fixed versus variable cost, and efficient rates of substitution between inputs. Although regression analysis techniques can provide more comprehensive comparisons than ratio analysis due to a multiple input model, regression analysis still has significant limitations. The use of least-square regression techniques results in estimates of central tendency relationships which are not necessarily efficient relationships.[8] This, coupled with the limitation of the use of a single dependent variable, could mask the interrelationships of a complex hospital system requiring multiple outputs and inputs to clearly identify the production function.

Data Envelopment Analysis

New approaches in identifying and measuring relative efficiencies among similar decision-making units (DMUs), which employ various inputs to produce various combinations of outputs, have been used in the Data

Envelopment Analysis (DEA) model developed by Charnes, Cooper, and Rhodes.[9] This model evolved from proposals by Farrell,[10] utilizing fractional linear programming techniques to explicitly consider multiple inputs and multiple outputs of similar DMUs. A decision-making unit is described as any organization unit with decision-making authority for input (resource) consumption and outputs (outcomes) which result. DEA overcomes traditional performance measurement problems by 1) being capable of handling non-commensurate multiple inputs and outputs, 2) not being dependent on any prior arbitrary weighting scheme, and 3) providing a single summary measure of the relative efficiency of a DMU as compared to other such DMUs producing similar outputs.[11]

The Data Envelopment Analysis methodology utilizes observed output and input levels to drive an efficiency frontier rather than using theoretical possibilities. With DEA, one can explicitly evaluate the multiple outputs and inputs of a hospital over a given period of time to analyze the overall technical efficiency of the hospital as a decision-making unit. The basic concept behind DEA is the identification of technical efficiency, namely, when output is maximized from a given set of inputs or inputs for production are minimized for a given level of output. DEA measures the relative efficiency of DMUs based on the relationship among selected inputs and outputs. Within the comparison group of DMUs, the model assigns the highest level of efficiency ratio of one to those units with highest relative efficiency. The combination of the highest efficiency units form a group of units called frontier units. Less efficient units will be assigned a ratio less than one and be inside the frontier units.[12]

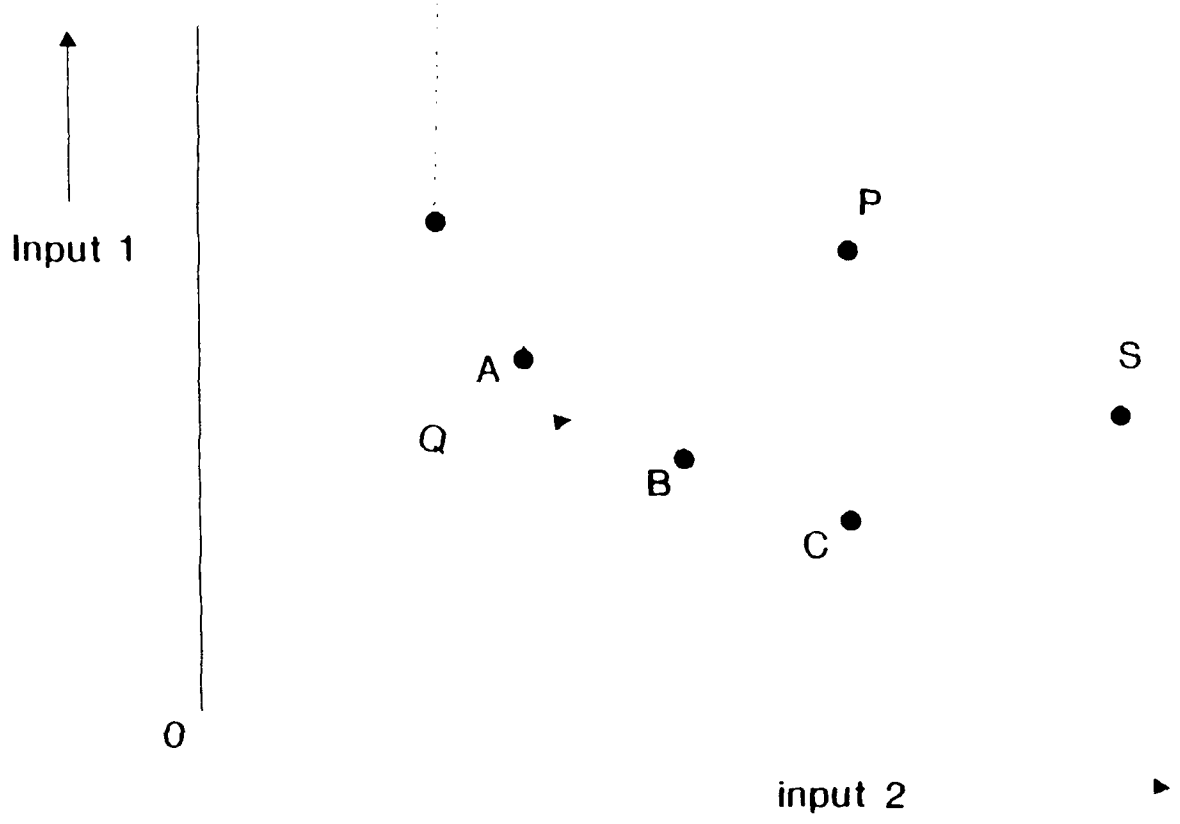

Figure 1

A graphic example of this DEA concept is noted in Figure 1.[13] Illustrated is an example of an efficiency frontier constructed from empirical observations of levels of Inputs 1 and 2 required to produce a specified level of output. Points A, B, and C represent frontier units that most efficiently use the smallest amount of resources (Inputs 1 and 2) in attaining equal amounts of output. Units P and S are inefficient units due to the consumption of greater amounts of Inputs 1 and 2 to produce the same output and are therefore inside the frontier region. The efficiency of inefficient unit P is specified by the fraction OQ/OP. Since unit S does not lie inside the empirically defined frontier, the

DEA model will assume that the line segment beyond point C will extend parallel to the Input 2 axis as illustrated by the dotted line.

DEA has been used to study relative efficiency in the areas of education,[14] U.S. Air Force Maintenance Units,[15] court systems,[16] and hospital administration.[17] One of DEA's limitations is that although DEA can effectively identify units that fall within the frontier confines of the data (enveloped), DEA does not provide empirical envelopment of inefficient units beyond the frontier region and tends to overestimate efficiency of some organizations.[18]

Constrained Facet Analysis

In 1980 Dr. Authella Bessent and Dr. Wailand Bessent at the University of Texas at Austin began development of a computer software technique to provide from more generalized applications of DEA. Results from prototype studies showed that DEA could overestimate the efficiency of inefficient units and lead to flawy information in interpreting the results of the DEA model.[19] Based on these limitations the Bessents developed the original framework for the extension of DEA.

Constrained Facet Analysis (CFA) is a natural extension to DEA, in that it presents units that extend beyond the efficient region or frontier in a fashion that considers both the lower and upper efficiency threshold that a unit could achieve. Although both DEA and CFA models can be used to compare relatively inefficient hospitals by comparing the inputs these hospitals consume relative to the final outputs produced

among a similar mix of hospitals, the CFA model takes the results of DEA and additionally looks at those units that extend beyond the frontier region. CFA considers the maximum and minimum efficiencies at which these units could produce based on the constraints of the model.

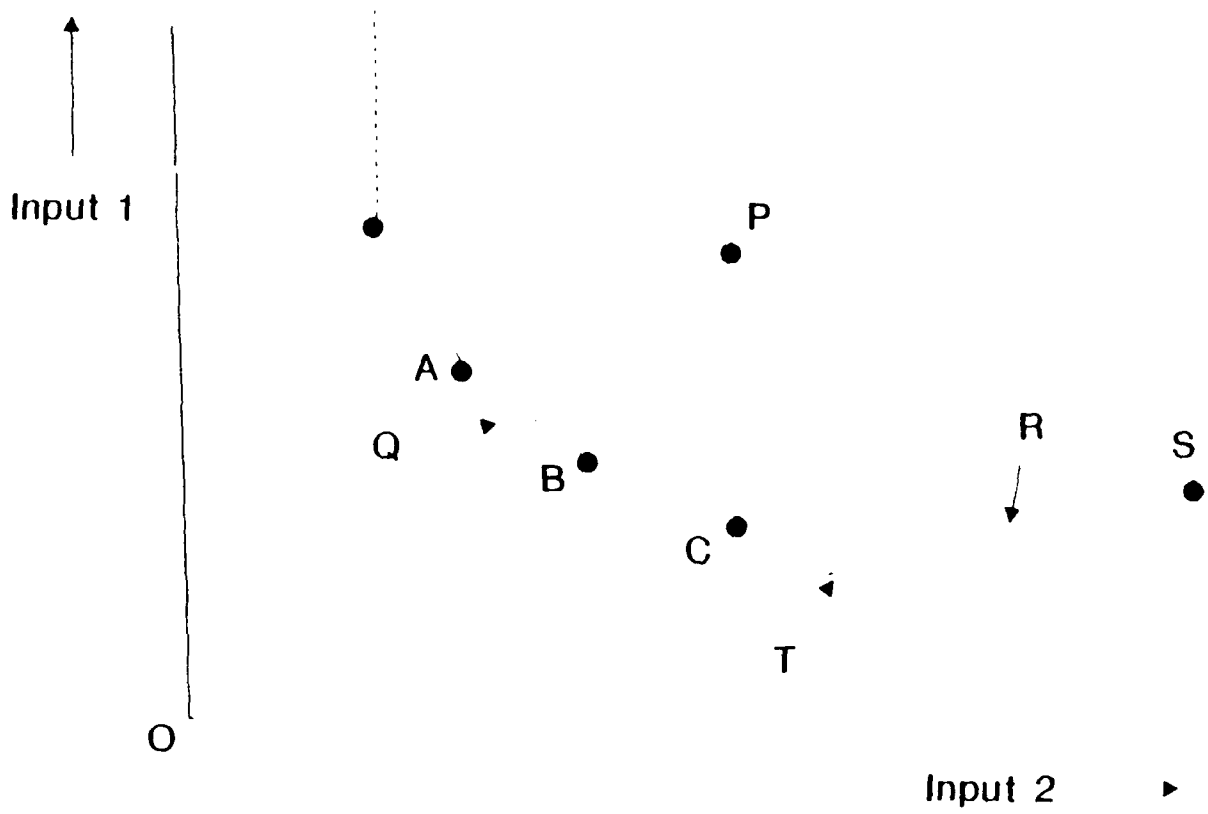

Figure 2

Figure 2 demonstrates a similar pattern as Figure 1 with the exception of the extension at point C. In the case of unit S, which is outside the frontier ABC, CFA would compute upper and lower bounds efficiency for unit S. The efficiency bounds are based on the extreme

extensions of the empirical frontier ABC. If the frontier were to be extended from unit C parallel to the Input 2 axis, the resultant efficiency for unit S would indicate a maximum efficiency, similar to the DEA model as the fraction OR/OS. By extending the slope of line segment BC, using the extended segment to calculate the efficiency ratio, unit S would be at a minimum efficiency as requested by the fraction OT/OS. For cases such as unit S, CFA attempts to create quasi envelopment of all units which are not fully enveloped by a DEA analysis. Thus, CFA provides a range of efficiency ratios representing the theoretical best and worst case scenario for those units that fall outside the normal frontier range.

Productivity Assessment Support System (PASS)

Initial work in developing a Decision Support System (DSS) in support of the CFA model is under development at the University of Texas at Austin under the direction of Drs. Bessent, Bessent, and Elam.[20] The DSS computer software, called the Productivity Analysis Support System (PASS), has been developed using standard microcomputer equipment with a commercially available database management system to capture, manipulate, and repor the data used in the CFA process. This development has provided a potential technique and framework to broaden field applications of CFA. With the availability of this software at a relatively low cost, additional tests can be accomplished outside the scope of traditional large computer centers and mainframe applications.

Although originally developed specifically for an educational system efficiency analysis, additional work to generalize the process has made it possible to analyze any type of DMU, given the appropriate inputs and outputs for that DMU. These latest efforts in generalizing the process may have potential utilization in the complex assessment of relative efficiency of hospital or health care related DMUs.

Using the PASS instrument and information presented in the literature review, efforts will focus on the applicability of this form of efficiency analysis on available AMEDD hospital data.

Endnotes

[1] A. Charnes, W. W. Cooper, and E. Rhodes, "Measuring the Efficiency of Decision Making Units," European Journal of Operational Research, Vol. 2, No. 6, November 1978, pp. 429-444.

[2] D. Sherman, "Hospital Efficiency Measurement and Evaluation," Medical Care, Vol. 22, No. 10, October 1984, pp. 922-938.

[3] Ibid., pp. 922-938.

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[9] Charnes, Cooper, and Rhodes.

[10] Farrell.

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[14] Ibid.

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[18] Bessent, Bessent, Clark, and Elam.

[19] Ibid.

[20] Banker, Conrad, and Strauss.

CHAPTER III

RESEARCH DESIGN

This research effort will focus on the acquisition and understanding of the Constraint Facet Analysis (CFA) model and its potential application in accessing relative efficiency in AMEDD hospitals. Successful utilization, understanding, and validation of the PASS Decision Support System process and analysis can provide additional management information and measurements against which to analyze resource consumption against output products.

PASS Acquisition

In exploring the availability of various DEA/CFA software support alternatives, it was discovered that Bessent, Bessent, and Elam from the University of Texas at Austin had done extensive research and development on a microcomputer-based CFA application using DBASE III as a database support product. This effort was in support of the Education Productivity Council (EPC) which comprised 25 independent school districts throughout Texas.[1] The CFA model was specific to the EPC project which was based at the University of Texas where a small project staff extended the theory and methodology, coordinated data collection, performed annual efficiency analyses, and provided reports to member schools.

The CFA methodology, as applied to the EPC effort, was further developed into a generalized framework, allowing for user-specified DMUs and associated inputs and outputs. By the end of 1985, the Productivity Assessment Support System was under final development and available in a pre-released form. It was agreed that the cost of the product ($5,000) would be half of the original projected product price, since the model was still in a "Beta" product form.

Health Care Studies and Clinical Investigation Activity (HCSCIA) agreed to fund the PASS model for evaluation in conjunction with ongoing efforts with the Performance Measurement Study (PMS) project. The justification and contract to purchase PASS are included in Appendix A. Deliverables for this contract included total systems software (including the CFA prototype and DBASE III), systems and operations documentation, training, and consultation services.

PASS Design

PASS is comprised of a set of 198 DBASE III modules for screen formats, databases, and controlling code functions to handle all data input/output functions, reporting, and data manipulation. At the core of this system is the actual CFA linear programming optimizer, developed in a PASCAL programming language that utilizes the data generated in the input DBASE modules to create an analysis set of data for post-analysis processing. The system requires an IBM-AT or compatible, 512K of memory, a color graphics monitor, and a 20 megabyte hard disk running under DOS 3.0 or greater.

There are five basic menu-driven functions to PASS, which include:

1. Builder functions - allows for the specification of system parameters and the creation, unloading, editing, and displaying of database files for input/output variables.

2. Efficiency analysis functions - provides a means for selecting output and input values, comparison sets, and organizational units to be analyzed by the CFA optimizer.

3. Reporting functions - establishes a set of selection criteria for specific output reports based on the results of the CFA optimizer.

4. *"What if" functions* - allows for temporary changes to input and output values of an organization unit (DMU) to investigate the resulting changes in efficiency analysis results.

5. Analysis save functions - archives the results of an analysis for further results comparisons with other analyses. These five modules include additional sets of sub-menus too numerous to mention. Each of these specified functions allows for detail tailoring of input and output products. A detailed explanation of these functions with specific examples on their use is available with the PASS User Documentation Manual.[2]

The data structure of PASS requires a three-level organizational hierarchy for representing the data in the model. Within the model, these three levels are referred to as level 1, level 2, and level 3

organizations. For the purposes of this model, the designated levels and identification codes for the AMEDD data were:

1. Level 1 - Type of hospital.
    a. 1 - Teaching hospital (MEDCEN).
    b. 2 - Large community hospital (large MEDDAC).
    c. 3 - Small community hospital (small MEDDAC).
2. Level 2 - Hospital number. This was assigned sequentially, 1 to 25 for each hospital within each category (MEDCENs were assigned 1 to 8, large MEDDACs were assigned 9 to 17, and small MEDDACs were assigned 18 to 25).
3. Level 3 - Specific hospital data elements used within the PASS model (Appendix B).

Preliminary Work With the Model

Initial receipt of PASS and loading it into an IBM-XT was accomplished by mid-February 1986. Since the original specified equipment required an IBM-AT, a few minor problems occurred during the load process due to disk format differences. Additional problems occurred when attempting to run the model with provided sample data. The errors in a number of PASS modules were relayed to Dr. Elam, who subsequently researched the specific cause and provided telephonic resolution or software diskettes to correct these problems. These problems included numeric overflow problems, missing data and text files, and missing control variables. A specific problem noted involved the absence of 8087 mathematical co-processor on the target IBM-XT

machine. Since the original development of the CFA optimizer utilized an 8087, the absence of this chip caused the system to abort. This problem was solved by including the command "SET NO87 = 8087 Suppressed" in the AUTOEXEC.BAT file in the IBM-XT. This information was passed to DBASE and the CFA optimizer which in turn excluded use of the 8087 from any calculations. Most of the software flaws were corrected and initial sample data produced expected results from the examples provided in the PASS documentation.

In concert with exercising the PASS software, a graduate level seminar, conducted by Dr. Authelle Bessent, focused on the theory and application PASS and the CFA model.[3] The objectives of this seminar were to: (1) develop an understanding of data requirements for productivity assessment models (namely PASS), (2) utilize the system to analyze and interpret productivity analyses for specific organizational units (DMUs), (3) understand the PASS data structure to distinguish spread sheet applications from data management applications, and (4) provide an understanding of current problem areas.

The most important aspect to the proper performance of PASS is the identification of appropriate input and output elements that best describe the production functions of a given DMU.[4] Data characteristics that are assumed by the CFA methodology include:

1. Positive productivity of input - increases in input levels should result in an increase in the level of output for at least one output.

2. Negative substitution rates among inputs - substitution or tradeoffs of some quantity of one input for another should be technically possible.

3. Negative substitution rates among outputs - resources or inputs can be used to produce one output or another.

Other considerations that may affect the usability of the PASS results include:

1. Variables (measurements) should be defined in such a way that management can understand and interpret the results in known terminology.

2. Input measures should be related to the planning and monitoring process.

3. A reliable method for data gathering should be developed, preferably using data that already exists.

4. Avoid variables that introduce bias into small or large units.

5. Redundant variables (two or more variables measuring the same input or output) should be consolidated into a single surrogate measure or use a single representative variable from the group.

With the basic understanding of PASS and the CFA constraints, the next step was to select and and collect a set of representative AMEDD data to be used as potential measurements for the model.

Development of Dataset

Development of appropriate input and output variables for inclusion in the conceptual model took into consideration broad areas within each military medical treatment facility (MTF). Categories of data selected include: costs (personnel and operating), admissions, outpatient and inpatient visits, physicians in training, relative weighted product sum groups (derived from Civilian Health and Medical Program of Uniformed Services [CHAMPUS] diagnosis related groups [DRGs] weighting of dispositions), and bed occupancy data. Data gathering focused on available retrospective information from a number of Health Service Command (HSC) organizations responsible for data gathering and management MTF information as it applies to the entire command. A subset of twenty-five Army hospitals for fiscal years 1985 through 1987 were selected based on availability and completeness of data. The variables selected, acronym used within the model, definition, and data source are listed in Appendix B. Although the names of the medical treatment facilities (MTFs) were included in the original database, these names will be omitted in this report for the purpose of anonymity.

Each data element listed in Appendix B also required a determination if the variable was an input or an output variable for the model. Of the seventeen variables targeted, thirteen were determined to be output and four were determined to be input variables. This determination was made by considering the basic tenants of the efficiency model which is to minimize the input functions while

maximizing the output functions. The fewer input products that are consumed to produce a certain level of outputs the more efficient the DMU, or conversely, the more output products that are produced given a certain level of inputs the more efficient the DMU. By applying these basic considerations to each variable, resources such as costs and personnel were selected as input variables, while output products tended to be in the patient related data such as patient visits, admissions, bed census, and DRG information. The exception was the physicians in training, who could fall into either category. For the purpose of this paper, they were included as an output variables.

Scaling adjustments were necessary to a number of variables to meet the sizing constraints of the model. The numeric limitation was established at six positions with a maximum of three positions to the right of the decimal. This limited a number of variables that went over one million; therefore, costs (personnel and operating) were expressed in thousands of dollars and visits (inpatient, outpatient, and annual) and total annual bed strength were expressed in hundreds of visits/beds.

To adjust for inflation and cost increases, the three cost variables (personnel costs, operating costs, and average cost per visit) were normalized to FY85 costs. This was accomplished by calculating the average increase from base year FY85 and adjusting each hospital's FY86 and FY87 cost figures downward by the average percent increase (see Appendix C). This was accomplished by taking the average cost increase for all facilities from one fiscal year to the next and decrementing each facility by the percentage of the average increase. For example,

the average personnel costs for all facilities rose from $41,431,000 in FY85 to $48,978,000 in FY87 or 15.41%. To adjust each facility, 100% minus 15.41% or .8459 was multiplied by the FY87 personnel costs for that facility to arrive at the normalized FY87 costs based on FY85 costs. The column labeled "Adj % Change" reflects the actual percentage increase or decrease relative to FY85 costs, upon normalization of the FY86 and FY87 data. This methodology did not take into account any regional variation or unique missions within these facilities. This adjustment was necessary to compare relative cost data among fiscal years.

No changes were made within the final hospital database, but were incorporated into the load program routine. This would allow for any adjustments necessary to satisfy the constraints of the model, while retaining the original data obtained from the HSC sources.

Database Development and Load Procedures

Data was gathered from final reports or in some cases, magnetic media was provided with the data formatted into a LOTUS spreadsheet. To accumulate all 70 data elements for each facility, a dBase III hospital database (HOSP.DBF) was developed to accommodate the data elements. Data was entered into this secondary database through manual typed entry or by using "append" commands to load the database directly from LOTUS spreadsheets. The final database structure and a listing of all data elements is provided in Appendix D.

To enter data into the PASS model, the Builder Menu is accessed from the main menu program. To initialize the PASS database, three functions must be performed: 1) loading initial organizational information (i.e., type hospital, hospital number, address, name), 2) loading the labels of the variable names, and 3) loading of detail data. The organizational information was entered using this builder process, however, since the loading of labels and data would be very time consuming and the data was already available in a database, an alternate load process was explored.

One of the functions in the Builder Menu allowed for the loading of measurements and labels from external files. It was necessary to first load all labels and data values into a single record file and then to load the PASS database from these files. A load program was written in dBase to take the information from the hospital database and create two "flat files" for loading into PASS. The program (LDHOSPDB) first constructed a file called HOSPLAB which developed independent label information for each fiscal year. The program then read each hospital's record from the hospital database and produced a record for each data element in file named HOSPLOAD. The procedural flow diagram, the load program (LDHOSPDB), and examples of the label and data files are provided in Appendix E.

From the Builder Menu, PASS processed the two files (HOSPLAB and HOSPLOAD) into two PASS database files (INOUTLAB.DBF and INOUTLMSR.DBF). These files were then manipulated by appropriate selection criteria in the PASS Analysis Menu to construct the selected analysis set. Using

this methodology, similar datasets can be constructed or modified to process large amounts of data into PASS, without using a more cumbersome data entry method resident within PASS.

Testing the PASS Model

After testing the PASS model with sample data given within the PASS documentation and developing a set of representative data from the AMEDD Hospital dataset, a test run was accomplished using published data and the Data Envelopment Analysis (DEA) technique. David Sherman reported on a set of eight teaching hospitals in Massachusetts using the DEA technique to measure the relative inefficiency of these hospitals.[5] The evaluation focused on the Medical-Surgical Areas of each of these hospitals. The data inputs used in the report were Full Time Equivalent (FTE) Nonphysicians, Supply Dollars, and Bed Days Available while the data outputs included Patient Days > or = 65 years of Age, Patient Days < 65 years of age, Number of Nurse Students, Number of Interns and Residents in Training. The dataset used for this run and sample output are listed in Appendix F.

Table 1 indicates the results reported for the DEA model and the results using Constrained Facet Analysis (CFA) and the PASS model.

TABLE 1
RESULTS USING DEA/CFA FOR EVALUATING THE RELATIVE EFFICIENCY OF THE MASSACHUSETTS HOSPITAL DATASET

Hospital	DEA Efficiency	CFA Efficiency
A	1.00	1.00
B	1.00	1.00
C	1.00	1.00
D	0.88	0.907
E	1.00	1.00
F	1.00	1.00
G	0.93	1.00

Using the DEA method, Hospitals D and G were identified as relatively inefficient, as indicated by an efficiency ratio less than 1.0. The CFA model produced only one unit, Hospital D, that was relatively inefficient. The other hospitals were indicated to be relatively efficient in comparing the data presented. These relatively efficient hospitals are frontier units that form the efficiency frontier as described earlier in Figure 1.

To explain the analyses differences and hence the differences noted in Table 1, a review of the Efficiency Comparison Report in Appendix F was required. The CFA analysis of relatively inefficient Hospital D reflects that the upper bound and lower bound efficiency were the same (0.907) and that envelopment of that unit did not occur. This report also indicates that Hospital D was not quasi-enveloped by extending the facets of the empirically defined frontier region, such as indicated by point S in Figure 2. Without this type of envelopment or quasi-envelopment, the results become unpredictable and questionable for comparative data utilization.[6]

An additional comparison of results of the individual data elements can be made between the DEA and CFA results using this dataset. As noted in Table 2, analyzing the results of each input and output level reflects the level at which a hypothetical hospital would need to operate to generate a higher output level given the input levels of Hospital D or the reduced levels of input to produce the given set of outputs in order to be a relatively efficient hospital. The DEA values were reported in the referenced article,[7] while the CFA results using the PASS model are provided in Appendix F.

TABLE 2
DEA/CFA COMPARISON OF HOSPITAL D INPUTS AND OUTPUTS FOR MASSACHUSETTS HOSPITAL DATASET

Data Element	Variable Type	DEA Levels	CFA Levels	Actual Levels
Interns/ Residents	Output	55.3	23.1	21
Nursing Students	Output	160.0	176.3	160.0
Patient Days > 65 years old	Output	33,530	36,956	33,530
Patient Days < 65 years old	Output	41,990	36,956	41,990
FTE- Nonphysician	Input	195.0	226.8	250.0
Supply Dollars	Input	133,670	286,707	316,000
Bed Days Available	Input	85,320	85,649	94,400

The DEA levels for each variable were derived by applying a weighted composite of the efficiency reference set hospitals, yielding a hypothetical hospital that produces as much or more outputs as the relatively inefficient Hospital D, also using less or the same amount of

inputs as Hospital D.[8] This composite is constructed by applying the dual variable weights from the DEA linear program. As indicated in Table 2, a combination of the variables from the reference set of hospitals would produce a hypothetical Hospital D that would use 55 fewer FTE nonphysicians, $182,000 fewer supply dollars, and 9,090 fewer days to produce the same amount of patient care and 34 more intern/resident training positions. Adjusting the database by decrementing the input variables and increasing the output variable above and running the PASS model a second time resulted in all hospitals having an efficiency rating of 1.0. The CFA PASS model utilizes a multiplier adjustment level for each set of inputs and outputs as noted in the Efficiency Analysis Report in Appendix F. This adjustment was made uniformly to each variable and did not take into account adjustments to specific variables as noted in the DEA model. Modifying the database using these adjusted input or output values for Hospital D also created a hypothetical hospital whose relative efficiency was equal to 1.0. In this process only one set of variables is adjusted (either input or output) to derive the hypothetical efficient hospital. This method is less effective since it does not address the specific elements that create efficiencies within a given DMU, as performed in the DEA model and this specific example.

Consideration of Variable Selection for Testing the PASS Model

To exercise the PASS Model using sets of data described in Appendixes B-D, a series of eighteen test runs were conducted on various input and output variables. These variables were selected to examine the performance of the model in creating complete frontiers using various combinations of retrospective AMEDD data and to analyze any resulting efficient (frontier DMUs) and inefficient (frontier enveloped DMUs) units. Along with the selection of the various input and output variables a combination of fiscal years and types of hospitals were used to provide a mix of possible productivity analysis sets.

Selection of appropriate variables took into consideration the criteria for the usability of PASS. It is generally accepted that the variables used from the AMEDD dataset are understood by management and the methods used for data gathering are reliable to the extent that individual hospitals are reporting the data accurately. Input and output measures are for the most part related to the planning process, with the exception of the the Relative Weighted Product Sum (RWPS) variables. The traditional Medical Composite Care Unit (MCCU) is used to give credit for inpatient workload and therefore related more directly to the planning process. However, the RWPS reflects the annual summary of inpatient workload based on the weighted Diagnostic Related Groupings (DRGs) and more accurately reflects consumption of resources based on a primary diagnosis and procedures utilized during the patient hospital stay. The RWPS provides a more definitive surrogate of case complexity and serves as a better relative measure of the resources consumed by inpatients.

There is no known introduction of bias into small or large units with the exception of physicians in training (total, interns, residents, and fellows) variables (FTE_TNG, FTE_TNGI, FTE_TNGR, and FTE_TNGF). Since there are limited or no physician training programs in the Type 2 or Type 3 hospitals (MEDDACs), use of these variables could introduce a bias into comparisons with Type 1 hospitals (MEDCENs).

To avoid redundant variables and to investigate the degree to which all input variables and all output variables measured relatively the same input or output products, a Pearson Correlation Matrix was run using SPSS/PC. Appendix G provides a matrix of both input and output variables, representing the Pearson correlation coefficient (r) as the correlation among each variable in the AMEDD dataset. A correlation coefficient reflects the strength of the linear relationship among these variables. An r value of 1.0 is indicated when there is an exact linear relationship. An r value of 0 indicates that there is no linear relationship. An r value of -1.0 reflects an exact negative linear relationship. Upon review it was noted that a majority of both input and output variables had a high degree of correlation (>.80). Since highly correlated variables provide similar representative information for the purposes of the model, single surrogate measurements or variables could be used. This approach would potentially limit the scope of information deemed appropriate for inclusion in the model and render the comparison efficiency analysis less meaningful. The Pearson matrix was used in considering use of similar categorical measurements, selecting the variable that presented weaker linear correlation when possible.

Testing of the PASS Model with AMEDD Data

The test runs were used to verify the degree to which the AMEDD data conformed to the DEA/CFA model assumptions and to determine whether an adequate reference set exists. A perfect data set would be one in which all inefficient units are enveloped in the upper bound (DEA) analysis.[9] This envelopment implies that the reference set is adequate for all relative efficiency comparisons and that all measures meet DEA/CFA model assumptions. A less desirable but acceptable data set would be one in which inefficient units were quasi-enveloped by either the upper or lower facet extensions. Finding inefficient units that cannot be enveloped by means of local frontier extensions is evidence that the model assumptions are not met. In this case, the information obtained from either DEA or CFA may not be useful.[10]

Appendix H reflects the selection criteria, number of DMUs in the test runs, and the results from the PASS model. From each test run, the number of efficient DMUs, inefficient DMUs, and number of incomplete and complete frontiers were summarized. This information was extrapolated from the Efficiency Comparison Report in PASS. For the inefficient DMUs, the number of DMUs that were enveloped were separated from the number of DMUs that were not enveloped by local frontiers or quasi-enveloped by the CFA lower bound analysis as noted in Table 3.

TABLE 3
PRODUCTIVITY ANALYSIS SUPPORT SYSTEM (PASS)
TEST GROUPS FROM AMEDD DATA
FY 85-87

TEST RUN	NUMBER OF EFFICIENT DMUs	INEFFICIENT ENVELOPED DMUs	INEFFICIENT NON-ENVELOPED DMUs	NUMBER OF INCOMPLETE FRONTIERS	NUMBER OF COMPLETE FRONTIERS
1	4	10	10	2	0
2	3	18	54	1	0
3	3	16	6	1	0
4	3	16	6	6	0
5	19	33	23	21	0
6	17	7	1	7	0
7	10	12	3	5	0
8	20	24	7	23	0
9	9	10	5	7	0
10	17	23	11	18	0
11	18	49	8	18	0
12	10	11	4	10	0
13	11	13	1	8	0
14	12	12	1	8	1
15	18	46	10	14	1
16	11	10	4	5	0
17	11	12	2	6	0
18	11	14	0	0	8

From the test run results, it is significant to note that most of the datasets selected produced inefficient DMUs that were not enveloped within the frontier region of the model. The DMUs for these datasets apparently do not conform to the model constraints and therefore information derived from the results of these test runs do not accurately reflect evaluations of the tested hospitals.

In the test analysis performed, the development of frontier regions was typically fragmented, as noted by the number of incomplete

frontiers that were formed in the test runs. This observation tends to indicate that a complete set of DMU data is not present to establish a multi-variable frontier region and that the reference set does not include enough hospitals for empirically based efficiency comparisons for all units.[11] Of all test runs performed, only three analyses produced complete frontier regions.

The only test run to produce favorable results by enveloping all inefficient DMUs and producing eight complete frontier regions was Test Run 18. This analysis included all hospitals for FY87 using the input variables Total Annual Costs for Patient Visits (COST_AVST), Total Annual Operating Costs and Total Annual Personnel Costs (COST_PERS) and output variables Total Annual Inpatient Visits (AMBV_IP), Total Annual Outpatient Visits (AMBV_OP), Total Annual Beds (BEDS_AN) and Total Relative Weighted Product Sum (RWPS_TOT). Similar results were noted for the same set of criteria in FY85 and FY86 (Test Runs 16 and 17); however, a number of units were not enveloped in each case and no complete frontiers were formed. When all fiscal years were used in Test Run 15, one complete frontier was established, but 10 of the 75 evaluated units were not enveloped. A summary of Efficiency Comparisons for Multiple Efficiency Analyses Report from PASS is provided in Appendix I for all these test runs. Valid output from the PASS model is critical in formulating detail results regarding DMU efficiency performance. Only Test Run 18 provided a complete reference dataset having a set of complete frontiers that fully envelop all inefficient DMUs and therefore usable for further exploration.

Discussion of PASS Results from Selected Dataset

As a Decision Support System (DSS), PASS produces a series of reports that provide additional management information as to the performance and comparisons of selected dataset analyses. These reports can be used to provide insight to elements that result in relatively inefficient units. These reports are presented for utility only. Further exploration using management diagnosis and analysis will be necessary to validate results derived from these reports.

Table 4 provides a summary of each hospital's relative efficiency from the selected test run for FY87 data.

TABLE 4
RELATIVE EFFICIENCY RANGES OF AMEDD HOSPITALS
FY87 EFFICIENCY ANALYSIS

HOSPITAL NUMBER	HOSPITAL TYPE	UPPER BOUND EFFICIENCY	LOWER BOUND EFFICIENCY
1	1	1.000	1.000
2	1	1.000	1.000
3	1	0.929	0.911
4	1	1.000	1.000
5	1	0.977	0.921
6	1	1.000	1.000
7	1	0.980	0.957
8	1	1.000	1.000
9	2	0.974	0.947
10	2	0.868	0.858
11	2	1.000	1.000
12	2	1.000	1.000
13	2	1.000	1.000
14	2	1.000	1.000
15	2	1.000	1.000
16	2	0.998	0.937
17	2	1.000	1.000
18	3	0.888	0.627
19	3	0.855	0.817
20	3	0.975	0.861
21	3	0.969	0.868
22	3	0.908	0.807
23	3	0.925	0.828
24	3	0.754	0.730
25	3	0.717	0.599

The upper bound efficiency or DEA facet is compared to the lower bound efficiency or CFA facet to derive a relative efficiency range in which each hospital DMU is operating. Eleven of the set of 25 hospitals were identified as being relatively efficient (upper and lower bound efficiency equal to 1.0).

PASS produces a set of management reports that provides information on the performance of each input/output variable relative to

other efficient hospital comparisons. This efficiency report can be produced using either the DEA (upper bound) or CFA (lower bound)information derived from the PASS analysis. Appendix J provides a complete set of DEA comparisons for each hospital. For each hospital the efficiency range is provided, as summarized in Table 4. Input and output values are listed along with the percent each contributes to the relative efficiency of the DMU being analyzed. The upper bound comparisons provide both the shortage of outputs and excess of inputs that contribute to the DMU's inefficiency. For each inefficient DMU, a multiplier is also established for adjustment of either all input or all output levels for the DMU to become efficient, relative to other frontier DMUs. A similar report can be produced for the lower bound analysis at reduced efficiency levels.

Analyzing a specific hospital in Appendix J, Hospital 10, a Type 2 facility has a relative efficiency range between .8578 and .8677. From the DEA analysis, a shortage of 19.64 (multiplied by 100) annual beds (BEDS_AN) and an excess of $823.62 (multiplied by 1000) annual cost of personnel (COST_PERS) was identified in contributing to the inefficiency of this DMU. Using an adjustment of 1.1525 for all output levels, an increase of 59.4 (multiplied by 100) inpatient visits (AMBV_IP), 1065 (multiplied by 100) outpatient visits (AMBV_OP), 95.1 (multiplied by 100) annual beds (BEDS_AN), and 1550.7 RWPS units (RWPS_TOT) would be required using the same input levels. Conversely, using a .8677 adjustment, input levels would need to be lowered by $1774 (multiplied by 1000) annual visit cost (COST_AVST), $2263.90 (multiplied by 1000) annual operating costs (COST_OPER), and $5629.90 (multiplied by

1000) annual personnel cost (COST_PERS) while maintaining the same levels of output.

From a practical management perspective, it would probably be unrealistic to make these significant changes within a hospital without having devastating effects on a facility's mission. When reviewing both the relative productivity of inputs and the percent contribution to efficiency of each variable reflected in these reports, more realistic assessments can be made. In the case of Hospital 10, the contribution of AMBV_IP, AMBV_OP, and RWPS_TOT reflect percentage contribution levels of 11%, 59%, and 16% respectively for an overall efficiency rating of 86%, while BEDS_AN contributes 0% to this overall rating. Likewise, COST_AVST provides 23% and COST_OPER provides 77% to the relative productivity of the inputs, while COST_PERS contributes 0%. A management analysis of those areas that are providing little or no relative contribution to improved efficiency within a given DMU would probably provide a better focus on deficits relative to other comparison efficient units.

Comparison of Relative Inefficient Hospitals With Frontier Units

After an efficiency analysis has been completed, it will usually be of interest to identify the efficient hospitals that define the frontier region for each inefficient hospital. In the case of this analysis set there are eight frontier groups comprised of six efficient hospitals each as listed in Appendix K. Each inefficient hospital is enveloped by one of these reference frontier hospital sets. This reference set will contain a mix or ratio of inputs and outputs most similar to the inefficient hospital unit.

A complete report of all inefficient hospitals and their corresponding frontier set is provided in Appendix L. For each efficient hospital, a list of input and output values is provided as a basis for comparing similar mixes of inputs and outputs from the previous efficiency report. The "multiplier" value in the report indicates which frontier unit is most similar to the reference unit in terms of an input and output mix. The larger the positive value of the multiplier, the more similar the units are relative to the mix of inputs and outputs.

Using Hospital 10 as an example from Appendix L, the six hospitals that form the frontier region that envelop Hospital 10 are Hospitals 6, 11, 12, 14, 15, and 17. Of these frontier hospitals, Hospital 17 presents the most similar mix of inputs and outputs with regard to Hospital 10, indicated by the largest multiplier for this group of 2.619. Using information presented in Hospital 10's efficiency report and comparisons of output and input ratios of these frontier

units may give diagnostic clues to resources being poorly used or outputs being driven by inefficient processes.[12] Similar comparisons can be made for each inefficient hospital using the set of frontier hospitals.

ENDNOTES

[1] A. Bessent, W. Bessent, J. Elam, and D. Long, "Educational Productivity Council Employs Management Sciences Methods to Improve Educational Quality," Vol. 14, No. 6, November-December 1984, pp. 1-8.

[2] A. Bessent, W. Bessent, and J. Elam, "Productivity Assessment Support System: User Documentation (Version 1.0)," Education Productivity Council, The University of Texas at Austin, January 1, 1986.

[3] A. Bessent, "Theory and Applications of Math Programming Models in Public and Private Sector Organizations," Graduate Course 5.228, Center for Business Administration, The University of Texas at Austin, Spring, 1986.

[4] A. Bessent, W. Bessent, and J. Elam, "Productivity Assessment Support System: User Documentation (Version 1.0)," Education Productivity Council, The University of Texas at Austin, January 1, 1986.

[5] D. Sherman, "Hospital Efficiency Measurement and Evaluation," Medical Care, Vol. 22, No. 10, October 1984, pp. 922-938.

[6] A. Bessent and B. Bessent, "Efficiency Frontier Analysis for Large Multi-Organization Application," unpublished report, The University of Texas at Austin, 1986, pp. 9-10.

[7] Sherman, pp. 927-928.

[8] Sherman, pp. 932-934.

[9] Bessent and Bessent, pp. 8-9.

[10] Bessent.

[11] Bessent and Bessent, pp. 9-10

[12] Bessent.

CHAPTER IV

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The need for better methodologies in assessing the relative efficiency of complex work units was clearly cited throughout the literature references. Advantages of using the Data Envelopment Analysis and Constrained Facet Analysis techniques, using a multiple input and multiple output efficiency model to evaluate hospitals, provided a better means to access the complex hospital environment which consumes a variety of resources to produce a set of output products.

Practical application of the DEA/CFA technique using the Productivity Analysis Support System, required an operational understanding of the advanced mathematical technique used in the model. Problems with the original release of the PASS software created delays in the operational demonstration, with some portions of the reporting functions not yet functional. The input and edit function of PASS were cumbersome, leading to significant work in developing a separate data loading and editing process. With this front-end process in place, adding and modifying data elements became relatively simple and enhanced the usability of the model.

The key to practical application of DEA/CFA is the selection of an appropriate dataset that satisfies the constraints of the model and

is accepted by management as an appropriate set of production functions against which to measure relative efficiencies. Of the eighteen sets of data criteria tested, only one set of data fully conformed to the criteria of the model. The data for fiscal year 1987 for all 25 AMEDD hospitals produced eleven relativity efficient hospitals and fourteen enveloped inefficient hospitals that were measured relative to eight complete frontier regions. This same full envelopment, using the same criteria for fiscal years 1985 and 1986, did not produce complete frontier regions, nor were all inefficient units enveloped. Information produced from this analysis is less useful due to lack of conformance to the data requirements of the model.

The retrospective AMEDD data used in this study was typically highly correlated based on Pearson's correlation coefficient ($r > .80$). This high correlation could explain the reason for non-envelopment of many of the decision-making units (DMUs) in the test runs. When these type of results occur one must consider adding additonal DMUs to the reference set or developing criteria that reflects other aspects that contribute to efficient hospital operations. This could be potentically accomplished by adding other DOD facilities to the reference set thus expanding the number of DMUs for consideration or developing additional criteria reflecting other aspects of efficiently run operations such as quality care, patient satisfaction, or acuity data.

The decision support system reports of PASS provide information on the performance of each hospital DMU. These reports provide comparative data on the performance of each facility in which management

can focus on excess resources (inputs) consumed or on reduced production levels (outputs) for each comparative DMU. These reports have the greatest potential use for management by providing detail information on which to base management decisions. Management understanding and acceptance of this application could be further enhanced as this type of software product becomes more readily available and the DEA/CFA technique becomes more widely accepted.

Recommendations

The PASS model using the DEA/CFA methodology has demonstrated that retrospective AMEDD data can be developed to access the rel tive efficiencies among a select set of hospital data. Further investigation of this methodology and model should continue using the latest version of PASS software recently developed at the University of Texas at Austin by Drs. Elam and Bessent. The license for the version V1.0 of PASS should be transferred to the Academy of Health Sciences for further exploration and testing.

Refinement of a more detail dataset of AMEDD data will be necessary to more clearly define the data elements or management indicators that contribute to an efficiently run hospital operation. Further investigation to the measurements or the development of surrogates that define efficient processes will need to be explored. Development of a set of data elements for more detailed DMUs, such as department or service level organizations within each hospital may be necessary to

more clearly define processes that contribute to the total hospital efficiency. Using this approach, specific departments within hospitals could be compared with other departments within the same hospital or could be compared with similar departments among other hospitals. Since minimum data is available for each departmental activity, significant work would be necessary in developing this type of information.

The most important aspect to further research using the DEA/CFA methodology is the understanding and acceptance of this approach by management and other decision makers. Identification of appropriate input criteria and the acceptance of the model results will be instrumental in further development of this model. Without management involvement in this methodology, results cannot be validated and therefore cannot be used in evaluating the relative efficiency among AMEDD hospitals.

APPENDIX A

GOVERNMENT CONTRACT

PRODUCTIVITY ANALYSIS SUPPORT SYSTEM (PASS)

GOVERNMENT CONTRACT

PRODUCTIVITY ANALYSIS SUPPORT SYSTEM (PASS)

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[ ] ORDER FOR SUPPLIES OR SERVICES

[ ] REQUEST FOR QUOTATIONS NO

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PAGE 1 of

5 CERTIFIED FOR NATIONAL DEFENSE UNDER DMS REG 1

00 C-9

1 CONTRACT/PURCH ORDER NO: DAHA11-86-M-1937

2 DELIVERY ORDER NO

3 DATE OF ORDER: 06 DEC 85

4 REQUISITION/PURCH REQUEST NO: SEE BELOW

6 ISSUED BY — CODE DAHA11
CONTRACTING BRANCH
HSHE-LOC
BROOKE ARMY MEDICAL CENTER
FORT SAM HOUSTON, TX 78234-6200

7 ADMINISTERED BY — CODE
MS. VALDEPENA
(512) 221-2806/4950/5446

8 DELIVERY FOR
[X] DEST
[ ] OTHER

9 CONTRACTOR/QUOTER — CODE — FACILITY CODE

NAME AND ADDRESS:
DR J ELAM, DR A HESSENT, & DR W HESSENT
CBA / UNIV OF TEXAS
AUSTIN, TX 78712

10 DELIVERY TO FOB POINT BY: 06 DEC 85

11 CHECK IF SMALL BUSINESS: [X] SMLL

12 DISCOUNT TERMS: NET 30 DAYS

13 MAIL INVOICES TO: SEE BLOCK 15

14 SHIP TO — CODE
HEALTH CARE STUDIES & CLIN IN
BLDG 2268, RM 111
FT SAM HOUSTON, TX 78130-6200

15 PAYMENT WILL BE MADE BY — CODE
FINANCE AND ACCOUNTING OFFICER
BUILDING 2589
FT SAM HOUSTON TX 78234-6200

MARK ALL PACKAGES AND PAPERS WITH CONTRACT OR ORDER NUMBER

16 TYPE OF ORDER

DELIVERY: This delivery order is subject to instructions contained on this side of form only and is issued on another Government agency or in accordance with and subject to terms and conditions of above numbered contract.

PURCHASE: Reference your ... furnish the following on terms specified herein including for U.S. purchases General Provisions of Purchase Order on DD Form 1155 ... EXCEPT CLAUSE NO ... [ ] ... IF CHECKED AND NO ... THIS BOX [ ]

If checked ... special provisions ... and delivery as indicated. This purchase is negotiated under authority of 10 USC 2304 ... or as specified in the schedule if within the U.S., its possessions or Puerto Rico, if otherwise under 2304(a)(6).

[ ] If checked, Additional General Provisions apply. Supplier shall sign Acceptance on DD Form 1155 and return

17 ACCOUNTING AND APPROPRIATION DATA/LOCAL USE

2162020 74-7408 P840000-2572 S41133 UBAA0009
USC 1ST FINAL UBAA HEALTH CARE INV

18 ITEM NO	19 SCHEDULE OF SUPPLIES/SERVICES	20 QUANTITY ORDERED/ ACCEPTED	21 UNIT	22 UNIT PRICE	23 AMOUNT
	MC/C				
0001	22016-06 CONSTRAINED FACET ANALYSIS (CFA) EFFICIENCY MODEL (SPECIFICATIONS ATTACHED)	1	EA	5,000.00	5,000.00

If quantity accepted by the Government is same as quantity ordered, indicate by ✓ mark. If different, enter actual quantity accepted below quantity ordered and encircle.

24 UNITED STATES OF AMERICA

BY [signature] 6 Dec 85
PAUL H. YBARRA, SFC — CONTRACTING/ORDERING OFFICER

25 TOTAL: 5,000.00

29 DIFFERENCES

26 QUANTITY IN COLUMN 20 HAS BEEN
[ ] INSPECTED [ ] RECEIVED [ ] ACCEPTED, AND CONFORMS TO THE CONTRACT EXCEPT AS NOTED

DATE — SIGNATURE OF AUTHORIZED GOVERNMENT REPRESENTATIVE

27 SHIP NO
[ ] PARTIAL
[ ] FINAL

28 D.O. VOUCHER NO

30 INITIALS

31 PAYMENT
[ ] COMPLETE
[ ] PARTIAL
[ ] FINAL

32 PAID BY

33 AMOUNT VERIFIED CORRECT FOR

34 CHECK NUMBER

35 BILL OF LADING NO

36 I certify this account is correct and proper for payment

SIGNATURE AND TITLE OF CERTIFYING OFFICER

PURCHASE REQUEST AND COMMITMENT

For use of this form, see AR 37-108 the proponent agency is USAFAC

PURCHASE INSTRUMENT NO	REQUISITION NO	DATE	PAGE	OF PAGES
W45 Mwl	22016-86	10 Nov 85	1	2

TO: C, Contracting Branch
Purchasing and Contracting Officer
Brooke Army Medical Center

THRU: C, Mat Br, Log Div, BAMC, FSHTX 78234

FROM: Property Book Officer, BAMC 5132

It is requested that the supplies and services enumerated below or on attached list be:

PURCHASED FOR: Health Care Studies and Clinical Investigation Activity APC U8AA HR-ZBH

DELIVERED TO: Health Care Studies & Clinical Investigation Activity, Bldg 2268, Rm 111, FSHTX 78234

NOT LATER THAN (Date): 25 Nov 85

The supplies and services listed below cannot be secured through normal supply channels or other Army supply sources in the immediate vicinity, and their procurement will not violate existing regulations pertaining to local purchases for stock, therefore, local procurement is necessary for the following reason: (Check appropriate box and complete item.)

NAME AND TELEPHONE NO. OF PERSON TO CALL FOR ADDITIONAL INFORMATION

[illegible] Contracting, 221-4509/4503

	LOCAL PURCHASES AUTHORIZED AS THE NORMAL MEANS OF SUPPLY FOR THE FOREGOING BY		REQUISITIONING DISCLOSES NONAVAILABILITY OF ITEMS AND LOCAL PURCHASE IS AUTHORIZED BY
X	AR 710-3		

EMERGENCY SITUATION PRECLUDES USE OF REQUISITION CHANNELS FOR SECURING ITEM

ITEM	DESCRIPTION OF SUPPLY OR SERVICES	QUANTITY	UNIT	ESTIMATED Unit Price	ESTIMATED Total Cost
	Request purchase of the following:				
1	Constrained Facet Analysis (CFA) Efficiency Model (specifications attached)	1	ea	$5,000.00	$5,000.00
	SOURCE: Dr. J. Elam, Dr. A. Bessent, and Dr. W. Bessent CBA The University of Texas Austin, TX 78712 Phone: (512) 471-5224				

Fund Certification

The supplies and services listed on this request are properly chargeable to the following allotments, the available balances of which are sufficient to cover the cost thereof, and funds have been committed.

ACCOUNTING CLASSIFICATION	AMOUNT
2162020 74-7408 P940000.2[illegible] S41133 U8AA0009	$5,000.00

DATE	TYPED NAME AND TITLE OF CERTIFYING OFFICER	SIGNATURE
10 Nov 85	RONALD L. NICHOLAS CPT, MS Comptroller	for Ronald L. Nicholas

DISCOUNT	
PURCHASE ORDER NUMBER	
DELIVERY SCHEDULE	

THE FOREGOING ITEMS ARE REQUIRED NOT LATER THAN AS INDICATED ABOVE FOR THE FOLLOWING PURPOSE

Approved by commanding officer or his designee

DATE	TYPED NAME AND GRADE OF INITIATING OFFICER	SIGNATURE
	DANIEL J. ACOSTA, DAC PRO, BAMC TELEPHONE NO 221-5132	

DATE	TYPED NAME AND GRADE OF SUPPLY OFFICER	SIGNATURE
	DANIEL J. ACOSTA, DAC PRO, BAMC 221-5132	

DATE	TYPED NAME AND GRADE OF COMMANDING OFFICER OR DESIGNEE	SIGNATURE
	EDWARD A. HASWELL COL, MS Chief, Log Div	

DA FORM 3953 1 AUG 76

PREVIOUS EDITIONS OF THIS FORM WILL BE USED UNTIL EXHAUSTED

[48]

PURCHASE REQUEST AND COMMITMENT (Continuation Sheet) For use of this form, see AR 37–108; the proponent agency is USAFAC.	REQUISITION NUMBER	DATE 19 Nov 85	PAGE 2 OF 2 PAGES

ITEM	DESCRIPTION OF SUPPLIES OR SERVICES	QUANTITY	UNIT	ESTIMATED UNIT PRICE	ESTIMATED TOTAL COST	DISCOUNT	DELIVERY SCHEDULE	PURCHASE ORDER NUMBER
	DESCRIPTION:							

The Contrained Facet Analysis (CFA) Efficiency Model is a protrtype system used in the comparison of relative efficiencies among non-homogeneous input and output work units. This working model will serve as the framework for evaluating the feasibility of applying the CFA technique among medical areas in the Health Service Command Medical Treatment Facilities. Specifications and delivery of this product are attached.

JUSTIFICATION: The Constrained Facet Analysis (CFA) model is a Decision Support System (DSS) tool to analyze relative efficiencies in a mixed input and output environment, similar to the units that may be experienced in medical care functions. A recent Performance Measurement Study (PMS) project, using similar concepts, was performed using the Data Envelopment Analysis (DEA) methodology. Although successful, this methodology had no longterm or continuing application since the process for analysis was relatively complex and relied heavily on the external consultation and support specified, to fully develop and analyze the data presented. The CFA prototype system uses a packaged product in the form of a framework model in which to develop and analyze similar types of data. The CFA methodology will provide an inhouse analysis tool that will not require the expensive outside resources necessary in evaluating and analyzing this data. It is crucial that this process be evaluated in an expeditious manner to coincide with analysis of other evaluation techniques being developed for the PMS. This is the only known source for the CFA process in this packaged form.

FOR FRED A. CECERE
LTC, MC
Cdr, HCSCIA

MARKS

[49]

DA FORM 1 Sep 77 3953a

REPLACES DA FORM 3953a, 1 JUN 73, WHICH IS OBSOLETE.

☆U.S.GPO:1983-0-664-035/715

PURCHASE REQUEST: Constrained Facet Analysis Model

1. DA Form 3953 (Purchase Request and Commitment):

Request purchase of the following:

1 - Constrained Facet Analysis (CFA) Efficiency Model (specifications attached).

SOURCE: Dr. J. Elam, Dr. A. Bessent, and Dr. W. Bessent
CBA _____
The University of Texas
Austin, TX 78712
Phone: (512) 471-5224

DESCRIPTION: The Contrained Facet Analysis (CFA) Efficiency Model is a prototype system used in the comparison of relative efficiencies among non-homogeneous input and output work units. This working model will serve as the framework for evaluating the feasibility of applying the CFA technique among medical areas in the Health Service Command Medical Treatment Facilities. Specifications and delivery of this product are attached.

JUSTIFICATION: The Constrained Facet Analysis (CFA) model is a Decision Support System (DSS) tool to analyze relative efficiencies in a mixed input and output environment, similar to the units that may be experienced in medical care functions. A recent Performance Measurement Study (PMS) project, using similar concepts, was performed using the Data Envelopment Analysis (DEA) methodolcgy. Although successful, this methodology had no longterm or continuing application since the process for analysis was relatively complex and relied heavily on the external consultation and support specified, to fully develop and analyze the data presented. The CFA prototype system uses a packaged product in the form of a framework model in which to develop and analyze similar types of data. The CFA methodology with provide an inhouse analysis tool that will not require the expensive outside resources necessary in evaluating and analyzing this data. It is crucial that this process be evaluated in an expeditious manner to coincide with analysis of other evaluation techniques being developed for the PMS. This is the only known source for the CFA process in this packaged form.

2. Specifications/Delivery.

a. All necessary material, as stated below, will be delivered NLT 1 December 1985 or 14 days subsequent to award of contract.

1. Complete Constrained Facet Analysis (CFA) prototype system with support database extensions.

2. Systems documentation package.

3. Operations documentation package.

b. Training and consultation, provided at the University of Texas - Austin and telephonic consultation will be as follows:

1. Training on the use of the CFA model limited to a maximum of 40 hours.

2. Consultation services will be in effect for the period of 1 year.

3. Both training and consultation do not require on-site visitation to HCSCIA on the part of the contractor.

c. Delivery to and Point of Contact is:

LTC John A. Coventry
Health Care Studies and Clinical Investigation Activity
Building 2268
Fort Sam Houston, Texas 78234-6060
(512) 221-5880

APPENDIX B

DATA ELEMENT LIST

RETROSPECTIVE AMEDD DATA FISCAL YEARS 1985-1987

Data Element List

Acronym	Name	Definition
TYPE_HOSP	Hospital Type	1 = Medical center/teaching facility 2 = Large medical activity 3 = Medium/small medical activity
HOSP_NAME	Name of Hospital	Accepted acronym or location of facility
HOSP_NUM	Hospital Number	Unique number for each hospital (1-25)
HOSP_UIC	Hospital UIC	Unit Identification Code of the hospital

(NOTE: The (#) for each of the following categories will indicate the last digit of the fiscal year in which the data was produced, i.e. COST_PERS6 will reflect the personnel costs for FY86.)

COST_PERS#	Personnel Costs	Total personnel costs (military and civilian) for each facility - expressed in thousands of dollars.
COST_OPER#	Operating Costs	Total annual operating costs associated with facility Operating and Maintenance Account (OMA) expenditures - expressed in thousands of dollars.
COST_AVST	Annual Visits - Total Cost	Total annual cost for all patient visits - expressed in thousands of dollars.
DISP#	Dispositions	Total annual patient dispositions (discharges, transfers, referrals, etc.) as reported by the Medical Expense Performance Reporting System (MEPRS).
ADM_AD#	Average Daily Admissions	Total number of admissions by facility divided by 365.
RWPS_TOT#	Relative Weighted Product Sum - Total	Dispositions from biometrics data weighted by CHAMPUS DRG relative weights.
RWPS_SHT#	Relative Weighted Product Sum - Short Stay Outliers	Short stay outliers within given DRGs minimum of 1.96 standard deviations.

Acronym	Name	Definition
RWPS_LONG#	Relative Weighted Product Sum - Long Stay Outliers	Long stay outliers outside given DRGs maximum of 1.96 standard deviations.
RWPS_XFER#	Relative Weighted Product Sum - Transfer	DRG credit received for a hospital transferring a given category patient.
AMBV_IP#	Total Ambulatory Inpatient Visits	Total visits by health care providers accomplished for individuals in an inpatient status - expressed in hundreds of patients.
AMBV_OP#	Total Ambulatory Outpatient Visits	Total visits by health care providers accomplished for outpatients - expressed in hundreds of patients.
FTE_AVE#	Full Time Equivalent Personnel	Average annual man years of combined military and civilian personnel used at each facility.
FTE_TNGI#	Full Time Equivalent Interns in Training	Average annual man years of physicians in first year graduate medical education training in the facility.
FTE_TNGR#	Full Time Equivalent Residents in Training	Average annual man years of physicians in residency training programs in the facility.
FTE_TNGF#	Full Time Equivalent Fellows in Training	Average annual man years of physicians in fellowship training programs in the facility.
BEDS_AD#	Average Daily Bed Census	Average number of beds that are filled daily within a facility.
BEDS_AN#	Total Annual Beds Occupied	Total inpatient beds ocuppied for the fiscal year - expressed in hundreds of beds.
VISIT_AD#	Average Daily Number of Visits	Average number of inpatient and outpatient visits made within the facility.
VISIT_AN#	Total Annual Visits	Total number of inpatient and outpatient visits made for the fiscal year - expressed in hundreds of visits.
COST_VST#	Cost per Visit	Average cost for each visit within the facility.

Data Element Source and Type Variable

Acronym	Name	Source of Data	Type Variable
COST_PERS#	Personnel Costs	HSC (HSRM-EM) MED-304 Report	Input
COST_OPER#	Operating Costs	HSC (HSRM-EM) MED-304 Report	Input
COST_AVST#	Annual Visits - Total Cost	Calculation (COST_VST# * VISITS_AN#)	Input
DISP#	Dispositions	PASBA MED-302 Report	Output
ADM_AD#	Average Daily Admissions	PASBA MED-302 Report	Output
RWPS_TOT#	Relative Weighted Product Sum - Total	HCSCIA DRG Study	Output
RWPS_SHT#	Relative Weighted Product Sum - Short Stay Outliers	HCSCIA DRG Study	Output
RWPS_LONG#	Relative Weighted Product Sum - Long Stay Outliers	HCSCIA DRG Study	Output
RWPS_XFER#	Relative Weighted Product Sum - Transfer	HCSCIA DRG Study	Output
AMBV_IP#	Total Ambulatory Inpatient Visits	PASBA MED-302 Report	Output
AMBV_OP#	Total Ambulatory Outpatient Visits	PASBA MED-302 Report	Output
FTE_AVE#	Full Time Equivalent Personnel	HSC (HSRM-MU) MEPRS	Input
FTE_TNGI#	Full Time Equivalent Interns in Training	HSC (HSRM-EM) GME Database	Output

Acronym	Name	Source of Data	Type Variable
FTE_TNGR#	Full Time Equivalent Residents in Training	HSC (HSRM-EM) GME Database	Output
FTE_TNGF#	Full Time Equivalent Fellows in Training	HSC (HSRM-EM) GME Database	Output
BEDS_AD#	Average Daily Bed Census	HSC (HSRM-EM) MEPRS	Output
BEDS_AN#	Total Annual Beds Occupied	Calculation (BEDS_AD# * 365)	Output
VISIT_AD#	Average Daily Number of Visits	HSC (HSRM-EM) MEPRS	Output
VISIT_AN#	Total Annual Visits	Calculation (VISIT_AD# * 365)	Output
COST_VST#	Cost per Visit	HSC (HSRM-EM) MEPRS	Input

APPENDIX C

DATABASE STRUCTURE FOR HOSPITAL DATA ELEMENTS AND AMEDD MEDICAL TREATMENT FACILITY DATA FISCAL YEARS 1985-1987

Database Structure for Hospital Data Elements
DBASE III Structure List

Structure for database : C:hosp.dbf
Number of data records : 25
Date of last update : 01/21/90

Field	Field name	Type	Width	Dec
1	TYPE_HOSP	Character	1	
2	HOSP_NAME	Character	7	
3	HOSP_NUM	Character	2	
4	HOSP_UIC	Character	6	
5	COST_PERS5	Numeric	6	
6	COST_PERS6	Numeric	6	
7	COST_PERS7	Numeric	6	
8	COST_OPER5	Numeric	6	
9	COST_OPER6	Numeric	6	
10	COST_OPER7	Numeric	6	
11	DISP5	Numeric	5	
12	DISP6	Numeric	5	
13	DISP7	Numeric	5	
14	ADM_AD5	Numeric	5	1
15	ADM_AD6	Numeric	5	1
16	ADM_AD7	Numeric	5	1
17	RWPS_TOT5	Numeric	7	1
18	RWPS_TOT6	Numeric	7	1
19	RWPS_TOT7	Numeric	7	1
20	RWPS_SHT5	Numeric	5	1
21	RWPS_SHT6	Numeric	5	1
22	RWPS_SHT7	Numeric	5	1
23	RWPS_LONG5	Numeric	7	1
24	RWPS_LONG6	Numeric	7	1
25	RWPS_LONG7	Numeric	7	1
26	RWPS_XFER5	Numeric	5	1
27	RWPS_XFER6	Numeric	5	1
28	RWPS_XFER7	Numeric	5	1
29	AMBV_IP5	Numeric	7	
30	AMBV_IP6	Numeric	7	
31	AMBV_IP7	Numeric	7	
32	AMBV_OP5	Numeric	7	
33	AMBV_OP6	Numeric	7	
34	AMBV_OP7	Numeric	7	
35	FTE_AVE5	Numeric	7	1
36	FTE_AVE6	Numeric	7	1
37	FTE_AVE7	Numeric	7	1
38	FTE_TNGI5	Numeric	7	1

39	FTE_TNGI6	Numeric	7	1
40	FTE_TNGI7	Numeric	7	1
41	FTE_TNGR5	Numeric	7	1
42	FTE_TNGR6	Numeric	7	1
43	FTE_TNGR7	Numeric	7	1
44	FTE_TNGF5	Numeric	7	1
45	FTE_TNGF6	Numeric	7	1
46	FTE_TNGF7	Numeric	7	1
47	BEDS_AD5	Numeric	6	1
48	BEDS_AD6	Numeric	6	1
49	BEDS_AD7	Numeric	6	1
50	VISIT_AD5	Numeric	6	1
51	VISIT_AD6	Numeric	6	1
52	VISIT_AD7	Numeric	6	1
53	COST_VST5	Numeric	6	2
54	COST_VST6	Numeric	6	2
55	COST_VST7	Numeric	6	2
56	ADM_AN5	Numeric	7	
57	ADM_AN6	Numeric	7	
58	ADM_AN7	Numeric	7	
59	FTE_TNG5	Numeric	7	
60	FTE_TNG6	Numeric	7	
61	FTE_TNG7	Numeric	7	
62	BEDS_AN5	Numeric	7	
63	BEDS_AN6	Numeric	7	
64	BEDS_AN7	Numeric	7	
65	VISIT_AN5	Numeric	7	
66	VISIT_AN6	Numeric	7	
67	VISIT_AN7	Numeric	7	
68	COST_AVST5	Numeric	6	
69	COST_AVST6	Numeric	6	
70	COST_AVST7	Numeric	6	
** Total **			437	

Health Services Command
Medical Treatment Facility Data

Fiscal Years 1985-1987
Sample Set of 25 Hospitals

Listed from DBASE III Database (HOSP)

Record#	HOSP NUM	COST PERS5	COST PERS6	COST PERS7	COST OPER5	COST OPER6	COST OPER7
1	1	64043	71289	76305	28679	26720	29523
2	2	81366	85366	92157	41083	43599	43870
3	3	56844	62961	68110	29353	29744	35053
4	4	61455	68776	70080	36383	40588	38942
5	5	48990	55304	63183	26018	26462	25396
6	6	49563	52147	67921	21547	24056	32818
7	7	79317	89959	99069	29096	32150	35436
8	8	132254	154157	157682	54765	54206	55779
9	9	30141	33102	33948	12414	11730	12102
10	10	44790	46571	50306	17596	16155	18222
11	11	31563	33813	34254	12306	11485	10700
12	12	37165	41521	45397	14148	13528	14280
13	13	26544	27943	29956	10719	10462	10075
14	14	25818	28327	29939	9951	9496	10176
15	15	18609	18897	22402	10521	12417	8881
16	16	47525	48484	52119	11960	16867	18555
17	17	27522	28809	29993	10655	10541	11133
18	18	19566	24200	25941	12740	10154	11423
19	19	31811	33202	35157	11869	11522	12406
20	20	23328	24657	25108	7435	11596	9561
21	21	13454	14964	15981	5483	4791	5129
22	22	13105	13738	15340	5597	5820	5798
23	23	27165	29432	29596	16186	10074	10491
24	24	20607	24567	26259	8112	8457	8595
25	25	23229	26460	28247	11758	12039	11605

Record#	HOSP NUM	COST VST5	COST VST6	COST VST7	COST AVST5	COST AVST6	COST AVST7
1	1	18.88	19.31	22.72	18063	18737	20649
2	2	25.49	28.25	31.23	29057	32873	35324
3	3	28.11	32.16	35.57	20930	23688	24686
4	4	25.13	25.38	35.42	17530	17930	24720
5	5	27.47	36.54	41.33	16065	19384	22888
6	6	15.17	16.56	21.64	14865	16383	23479
7	7	21.53	23.46	26.01	18434	20316	23800
8	8	15.54	25.91	23.03	17130	28261	26249
9	9	19.12	20.75	20.64	10665	11568	11312
10	10	18.52	20.01	23.04	14441	15300	16998
11	11	16.88	19.56	20.72	9721	10487	10001
12	12	20.42	21.76	23.77	13859	15876	17015
13	13	17.01	17.65	19.13	8504	8336	8533
14	14	16.89	18.63	27.09	8874	10391	14339
15	15	14.45	15.07	19.45	6146	6411	8393
16	16	18.47	19.92	20.89	16046	17422	17796
17	17	16.75	16.70	19.14	8872	9278	9827
18	18	17.45	27.12	26.28	8291	11810	11486
19	19	18.44	22.22	22.81	9623	11320	11405
20	20	17.99	20.18	19.70	7572	8038	8147
21	21	20.51	17.31	21.61	4495	4060	5079
22	22	21.14	19.56	23.21	4711	4716	5307
23	23	21.54	23.09	20.89	8660	9761	9229
24	24	18.12	22.35	26.99	5611	6709	8092
25	25	17.67	21.72	26.96	6763	7596	9242

Record#	HOSP NUM	FTE AVE5	FTE AVE6	FTE AVE7	DISP5	DISP6	DISP7
1	1	2247.6	2439.9	2619.1	18606	18194	21318
2	2	3133.1	3237.4	3286.8	19458	19933	20617
3	3	2037.1	2223.7	2263.7	14730	14342	15355
4	4	2732.0	2779.5	2798.9	15969	13979	15476
5	5	1873.1	1869.9	1933.9	10687	10558	11222
6	6	455.4	513.2	625.9	20641	19602	23254
7	7	2627.5	2794.3	2817.5	22971	22933	24472
8	8	4968.9	5053.4	4962.2	21175	20631	24098
9	9	1155.7	1186.9	1163.5	10181	9966	9634
10	10	1719.6	1735.4	1803.8	15058	14409	15672
11	11	1235.9	1203.9	1295.6	11390	11289	11015
12	12	1352.1	1432.2	1485.2	11395	11594	11935
13	13	929.7	904.7	1023.7	8053	9917	9815
14	14	1030.6	1081.0	1129.5	10555	10083	10344
15	15	776.8	813.2	891.8	6044	7214	6318
16	16	1573.3	1823.0	1900.6	16304	16949	17654
17	17	1180.5	995.6	1246.8	9265	9706	10655
18	18	763.5	786.0	867.0	8357	7981	8004
19	19	1194.9	1190.3	1316.1	10267	9137	8818
20	20	851.1	816.3	724.7	8207	7570	7413
21	21	531.6	552.7	552.6	3936	4083	4085
22	22	513.9	514.9	529.3	4671	4228	4701
23	23	965.1	1049.7	1083.5	7604	7471	8726
24	24	897.7	884.8	878.3	7030	6600	6713
25	25	890.8	916.6	989.7	6511	6579	6220

Record#	HOSP NUM	ADM AD5	ADM AD6	ADM AD7	ADM AN5	ADM AN6	ADM AN7
1	1	51.8	51.6	58.6	18907	18834	21389
2	2	53.2	54.6	58.6	19418	19929	21389
3	3	41.2	42.1	42.0	15038	15366	15330
4	4	43.4	41.9	42.4	15841	15294	15476
5	5	29.5	29.3	30.5	10768	10694	11132
6	6	56.8	53.9	63.6	20732	19674	23214
7	7	63.4	64.5	67.0	23141	23542	24455
8	8	63.6	68.1	66.0	23214	24856	24090
9	9	28.2	27.6	26.6	10293	10074	9709
10	10	41.3	39.7	42.7	15074	14491	15586
11	11	32.2	31.8	30.1	11753	11607	10986
12	12	31.4	32.4	32.6	11461	11826	11899
13	13	26.3	27.3	26.8	9600	9964	9782
14	14	28.9	27.7	28.2	10548	10110	10293
15	15	16.6	20.2	17.2	6059	7373	6278
16	16	44.9	46.6	48.4	16388	17009	17666
17	17	25.5	26.7	29.2	9308	9746	10658
18	18	23.4	23.3	21.9	8541	8504	7993
19	19	28.1	25.1	24.1	10256	9162	8796
20	20	22.7	20.9	20.9	8286	7628	7628
21	21	10.9	10.9	11.0	3978	3978	4015
22	22	12.8	12.3	13.1	4672	4490	4782
23	23	20.9	20.9	23.7	7628	7628	8650
24	24	19.3	18.0	18.3	7044	6570	6680
25	25	17.9	18.6	16.9	6533	6789	6168

Record#	HOSP NUM	BEDS AD5	BEDS AD6	BEDS AD7	BEDS AN5	BEDS AN6	BEDS AN7
1	1	392.0	348.8	340.3	143080	127312	124210
2	2	455.7	465.4	437.5	166330	169871	159688
3	3	341.3	329.1	317.5	124574	120122	115888
4	4	369.7	361.8	367.0	134940	132057	133955
5	5	308.8	283.2	280.9	112712	103368	102528
6	6	289.4	282.8	305.6	105631	103222	111544
7	7	425.8	430.2	420.5	155417	157023	153482
8	8	722.3	722.0	689.8	263640	263530	251777
9	9	140.7	131.3	121.7	51355	47925	44420
10	10	171.6	161.9	170.9	62634	59094	62378
11	11	146.8	152.1	136.7	53582	55516	49895
12	12	178.4	170.0	169.6	65116	62050	61904
13	13	122.3	127.6	115.6	44640	46574	42194
14	14	120.8	113.5	106.0	44092	41428	38690
15	15	100.9	106.3	96.5	36828	38800	35222
16	16	181.6	199.1	195.7	66284	72672	71430
17	17	121.5	124.9	124.8	44348	45588	45552
18	18	85.1	80.5	72.7	31061	29382	26536
19	19	115.5	115.1	102.7	42158	42012	37486
20	20	95.5	88.7	87.7	34858	32376	32010
21	21	59.3	55.5	46.5	21644	20258	16972
22	22	49.8	48.1	51.3	18177	17556	18724
23	23	86.1	90.8	97.8	31426	33142	35697
24	24	89.0	80.2	69.0	32485	29273	25185
25	25	81.8	77.7	69.6	29857	28360	25404

Record#	HOSP NUM	RWPS TOT5	RWPS TOT6	RWPS TOT7	RWPS XFER5	RWPS XFER6	RWPS XFER7
1	1	18048.7	17335.2	16636.2	132.3	74.0	100.3
2	2	25788.6	26666.7	27430.6	206.1	227.1	232.6
3	3	15690.4	14653.6	15790.6	110.9	156.4	177.9
4	4	19147.6	17061.5	19025.6	81.0	99.1	53.7
5	5	16636.2	15250.2	13915.9	156.2	91.9	88.7
6	6	17909.1	17906.8	19312.5	86.1	92.6	100.5
7	7	21047.8	21333.1	21231.7	338.7	427.1	223.2
8	8	29901.9	28370.6	33005.8	51.0	70.6	203.2
9	9	7193.1	6993.9	7014.9	330.5	379.4	329.2
10	10	10195.3	9964.1	10170.1	271.2	269.9	342.5
11	11	7811.9	8090.1	7884.6	173.6	214.5	259.8
12	12	9211.8	9109.5	9462.2	300.8	209.8	192.7
13	13	6880.4	7694.7	7326.2	131.0	99.5	61.7
14	14	7135.9	7002.5	6912.9	261.2	370.0	252.4
15	15	5510.8	6069.3	5053.5	179.7	119.4	141.4
16	16	11572.6	11918.8	12302.4	646.0	620.4	642.0
17	17	7065.7	7320.0	7450.1	306.8	250.5	371.6
18	18	5367.0	5040.4	4886.5	146.3	169.0	165.1
19	19	6679.5	6449.6	6519.8	201.2	195.7	180.5
20	20	5540.1	5215.7	5295.4	306.1	152.4	180.0
21	21	3135.6	3324.9	3101.3	51.0	46.9	61.3
22	22	3212.0	3034.5	3473.0	118.8	57.4	130.9
23	23	5396.4	5594.2	6118.1	134.3	178.4	161.0
24	24	5012.2	4657.9	4328.5	214.2	177.2	88.1
25	25	4408.2	4507.8	4353.7	145.1	194.0	115.7

Record#	HOSP NUM	RWPS SHT5	RWPS SHT6	RWPS SHT7	RWPS LONG5	RWPS LONG6	RWPS LONG7
1	1	103.8	133.5	163.6	5439.0	4605.1	3559.1
2	2	347.6	307.5	324.0	8322.5	8839.8	8914.9
3	3	145.0	143.1	151.6	4634.9	4001.4	4254.4
4	4	78.3	93.6	84.8	6848.6	5762.6	6694.5
5	5	93.4	78.0	75.4	6118.1	4931.5	5689.7
6	6	200.2	196.5	200.7	3410.7	3590.6	3523.6
7	7	234.0	288.3	283.5	6745.8	6483.9	6005.3
8	8	213.5	182.6	271.0	13979.1	11685.4	13096.9
9	9	59.3	62.6	78.2	1437.4	1179.5	1314.3
10	10	108.6	81.0	81.4	1280.0	1487.0	1275.5
11	11	65.4	74.7	94.2	1191.6	1527.9	1269.9
12	12	41.4	48.9	61.0	2305.4	2167.3	2397.8
13	13	40.0	38.6	33.3	1128.8	1278.1	1112.3
14	14	50.7	72.0	56.0	918.2	818.8	825.9
15	15	31.5	35.7	20.0	1691.1	1700.4	1313.5
16	16	138.7	82.8	94.7	1199.6	1307.6	1409.0
17	17	40.0	30.4	60.5	1656.9	1641.2	1322.7
18	18	65.3	57.3	77.3	467.0	470.2	290.3
19	19	49.1	49.2	73.5	776.6	913.3	1068.7
20	20	51.2	54.0	51.8	818.2	825.9	767.7
21	21	23.9	31.6	44.0	550.1	675.8	611.3
22	22	27.1	26.3	49.3	414.7	483.1	495.8
23	23	50.4	65.9	72.9	887.0	1211.5	1026.7
24	24	93.2	46.7	85.0	859.3	647.3	673.3
25	25	40.1	48.9	85.3	595.3	627.9	713.4

Record#	HOSP NUM	AMBV IP5	AMBV IP6	AMBV IP7	AMBV OP5	AMBV OP6	AMBV OP7
1	1	194379	180373	165358	762365	789942	743504
2	2	289830	345311	311379	850115	818344	819735
3	3	112359	109026	96364	632218	627542	597651
4	4	185277	180141	175169	512295	526333	522753
5	5	157906	131123	128501	427712	399371	425270
6	6	132842	184667	234028	852638	807399	854186
7	7	91793	102325	103570	764378	763681	811452
8	8	250960	232678	256997	851333	858052	882775
9	9	41379	34712	34564	516404	522804	513530
10	10	39318	40794	38946	738545	722045	698837
11	11	37120	29751	21970	538756	506476	461432
12	12	51345	45511	36803	579946	632422	679048
13	13	29657	26045	16556	470256	446273	429514
14	14	25739	32914	31365	499625	524839	497943
15	15	25343	19530	20679	399942	405886	410871
16	16	35214	20777	20890	834175	853653	831035
17	17	30553	27894	23915	499105	527683	489488
18	18	11081	13185	14318	464061	422300	422721
19	19	24634	22736	25277	461231	450684	474736
20	20	20708	17243	17419	400221	381067	396143
21	21	8034	6305	6272	211166	228252	228153
22	22	4644	2477	2623	218172	238597	226013
23	23	25612	33226	24795	376441	389529	416984
24	24	19082	16665	16134	293598	283516	283678
25	25	17217	12831	12728	339721	314720	330090

Record#	HOSP NUM	VISIT AD5	VISIT AD6	VISIT AD7	VISIT AN5	VISIT AN6	VISIT AN7
1	1	2621.2	2658.4	2490.0	956738	970316	908850
2	2	3123.1	3188.1	3098.9	1139932	1163656	1131098
3	3	2039.9	2018.0	1901.4	744564	736570	694011
4	4	1911.2	1935.5	1912.1	697588	706458	697916
5	5	1602.2	1453.4	1517.2	584803	530491	553778
6	6	2684.6	2710.4	2972.6	979879	989296	1084999
7	7	2345.7	2372.6	2506.9	856180	865999	915018
8	8	3020.0	2988.3	3122.7	1102300	1090730	1139786
9	9	1528.2	1527.4	1501.6	557793	557501	548084
10	10	2136.3	2094.8	2021.3	779750	764602	737774
11	11	1577.7	1468.9	1322.4	575860	536148	482676
12	12	1859.5	1998.9	1961.2	678718	729598	715838
13	13	1369.7	1294.0	1222.1	499940	472310	446066
14	14	1439.4	1528.1	1450.2	525381	557756	529323
15	15	1165.2	1165.5	1182.3	425298	425408	431540
16	16	2380.2	2396.1	2334.0	868773	874576	851910
17	17	1451.1	1522.1	1406.6	529652	555566	513409
18	18	1301.8	1193.1	1197.4	475157	435481	437051
19	19	1429.7	1395.7	1369.9	521840	509430	500014
20	20	1153.2	1091.3	1133.0	420918	398324	413545
21	21	600.4	642.6	643.9	219146	234549	235024
22	22	610.5	660.5	626.4	222832	241082	228636
23	23	1101.5	1158.2	1210.4	402048	422743	441796
24	24	848.4	822.4	821.4	309666	300176	299811
25	25	1048.6	958.1	939.2	382739	349706	342808

Record#	HOSP NUM	FTE TNG5	FTE TNG6	FTE TNG7	FTE TNGI5	FTE TNGI6	FTE TNGI7
1	1	183	186	158	65.0	59.2	56.1
2	2	275	275	286	37.0	42.4	36.2
3	3	129	132	138	36.2	35.4	33.1
4	4	143	157	152	37.2	37.5	53.7
5	5	197	189	192	47.2	44.9	43.6
6	6	192	199	166	52.9	58.2	46.6
7	7	211	200	202	27.1	33.6	31.4
8	8	200	238	253	34.3	35.9	33.1
9	9	0	0	7	0.0	0.0	0.0
10	10	45	57	56	3.6	1.2	2.7
11	11	14	19	29	0.0	0.0	0.0
12	12	43	55	53	0.0	0.0	0.0
13	13	0	2	9	0.0	0.0	0.0
14	14	6	8	8	0.0	0.0	0.0
15	15	0	0	0	0.0	0.0	0.0
16	16	21	66	66	8.5	18.4	17.9
17	17	0	0	0	0.0	0.0	0.0
18	18	0	16	32	0.0	0.0	0.0
19	19	38	40	57	0.0	0.0	0.0
20	20	13	6	8	6.4	0.4	0.0
21	21	0	0	0	0.0	0.0	0.0
22	22	0	0	0	0.0	0.0	0.0
23	23	1	1	0	0.0	0.0	0.0
24	24	2	2	1	0.0	0.0	0.0
25	25	0	0	0	0.0	0.0	0.0

Record#	HOSP NUM	FTE TNGR5	FTE TNGR6	FTE TNGR7	FTE TNGF5	FTE TNGF6	FTE TNGF7
1	1	118.2	126.9	102.3	13.3	12.7	12.1
2	2	238.3	232.7	250.0	43.9	46.4	41.7
3	3	93.2	96.5	105.1	0.0	0.0	2.8
4	4	105.4	119.1	97.9	28.1	27.3	31.8
5	5	150.2	144.4	148.7	22.1	19.6	20.5
6	6	139.2	140.8	119.2	11.6	14.9	28.4
7	7	184.3	166.2	170.1	7.5	8.8	6.8
8	8	165.7	201.6	219.9	48.8	53.5	57.5
9	9	0.0	0.0	6.8	0.0	0.0	0.0
10	10	41.4	55.9	53.0	0.5	0.0	0.0
11	11	13.5	19.0	29.1	0.0	0.0	0.0
12	12	43.1	54.6	53.4	0.0	0.0	0.0
13	13	0.0	2.3	8.6	0.0	0.0	0.0
14	14	5.8	7.5	7.6	0.0	0.0	0.0
15	15	0.0	0.0	0.0	0.0	0.0	0.0
16	16	12.3	47.6	48.1	0.0	0.0	0.0
17	17	0.0	0.0	0.0	0.0	0.0	0.0
18	18	0.0	16.1	31.9	0.0	0.0	0.0
19	19	38.4	39.7	57.4	0.0	0.0	0.0
20	20	6.4	5.7	8.0	0.0	0.0	1.3
21	21	0.0	0.0	0.0	0.0	0.0	0.0
22	22	0.0	0.0	0.0	0.0	0.0	0.0
23	23	1.4	1.2	0.0	0.0	0.0	0.0
24	24	1.5	2.2	1.3	0.0	0.0	0.0
25	25	0.0	0.0	0.0	0.0	0.0	0.0

APPENDIX D

ADJUSTED MEDICAL TREATMENT FACILITY COST DATA

FISCAL YEARS 1985-1987

ADJUSTED MEDICAL TREATMENT FACILITY COST DATA

FISCAL YEARS 1985-1987

HOSPITAL COSTS 1985-87

HOSPITAL	PERS 1985	PERS 1986	PERS 1985 $s	Adj % Change	PERS 1987	PERS 1985 $s	Adj % Change
1	64043	71289	64848	1.24%	76305	64547	0.78%
2	81366	85366	77654	-4.78%	92157	77956	-4.37%
3	56844	62961	57273	0.75%	68110	57615	1.34%
4	61455	68776	62562	1.77%	70080	59281	-3.67%
5	48990	55304	50308	2.62%	63183	53447	8.34%
6	49563	52147	47436	-4.48%	67921	57455	13.74%
7	79317	89959	81832	3.07%	99069	83803	5.35%
8	132254	154157	140230	5.69%	157682	133385	0.85%
9	30141	33102	30111	-0.10%	33948	28717	-4.96%
10	44790	46571	42364	-5.73%	50306	42554	-5.25%
11	31563	33813	30758	-2.62%	34254	28976	-8.93%
12	37165	41521	37770	1.60%	45397	38402	3.22%
13	26544	27943	25418	-4.43%	29956	25340	-4.75%
14	25818	28327	25768	-0.19%	29939	25326	-1.94%
15	18609	18897	17190	-8.26%	22402	18950	1.80%
16	47525	48484	44104	-7.76%	52119	44088	-7.80%
17	27522	28809	26206	-5.02%	29993	25371	-8.48%
18	19566	24200	22014	11.12%	25941	21944	10.84%
19	31811	33202	30202	-5.33%	35157	29740	-6.96%
20	23328	24657	22429	-4.01%	25108	21239	-9.84%
21	13454	14964	13612	1.16%	15981	13518	0.48%
22	13105	13738	12497	-4.87%	15340	12976	-0.99%
23	27165	29432	26773	-1.46%	29596	25036	-8.51%
24	20607	24567	22347	7.79%	26259	22213	7.23%
25	23229	26460	24069	3.49%	28247	23894	2.78%
Average Costs	41431	45546	41431		48978	41431	
		0.0903			0.1541		
Percent Increase		9.03%			15.41%		

HOSPITAL COSTS 1985-87

HOSPITAL	OPER 1985	OPER 1986	OPER 1985 $s	Adj % Change	OPER 1987	OPER 1985 $s	Adj % Change
1	28679	26720	26244	-9.28%	29523	27726	-3.44%
2	41083	43599	42822	4.06%	43870	41200	0.28%
3	29353	29744	29214	-0.48%	35053	32920	10.83%
4	36383	40588	39864	8.73%	38942	36572	0.52%
5	26018	26462	25990	-0.11%	25396	23850	-9.09%
6	21547	24056	23627	8.80%	32818	30821	30.09%
7	29096	32150	31577	7.86%	35436	33279	12.57%
8	54765	54206	53239	-2.87%	55779	52384	-4.54%
9	12414	11730	11521	-7.75%	12102	11365	-9.23%
10	17596	16155	15867	-10.90%	18222	17113	-2.82%
11	12306	11485	11280	-9.09%	10700	10049	-22.46%
12	14148	13528	13287	-6.48%	14280	13411	-5.50%
13	10719	10462	10275	-4.32%	10075	9462	-13.29%
14	9951	9496	9327	-6.69%	10176	9557	-4.13%
15	10521	12417	12196	13.73%	8881	8340	-26.14%
16	11960	16867	16566	27.81%	18555	17426	31.37%
17	10655	10541	10353	-2.92%	11133	10455	-1.91%
18	12740	10154	9973	-27.75%	11423	10728	-18.76%
19	11869	11522	11317	-4.88%	12406	11651	-1.87%
20	7435	11596	11389	34.72%	9561	8979	17.20%
21	5483	4791	4706	-16.52%	5129	4817	-13.83%
22	5597	5820	5716	2.09%	5798	5445	-2.79%
23	16186	10074	9894	-63.59%	10491	9853	-64.28%
24	8112	8457	8306	2.34%	8595	8072	-0.50%
25	11758	12039	11824	0.56%	11605	10899	-7.88%
Average Costs	18255	18586	18255		19438	18255	
		0.0178			0.0609		
Percent Increase		1.78%			6.09%		

HOSPITAL COSTS 1985-87

HOSPITAL	VISIT-AD 1985	VISIT-AD 1986	VISIT-AD 1985 $s	Adj % Change	VISIT-AD 1987	VISIT-AD 1985 $s	Adj % Change
1	18.88	19.31	17.12	-10.27%	22.72	17.93	-5.30%
2	25.49	28.25	25.05	-1.77%	31.23	24.64	-3.43%
3	28.11	32.16	28.51	1.42%	35.57	28.07	-0.14%
4	25.13	25.38	22.50	-11.67%	35.42	27.95	10.09%
5	27.47	36.54	32.40	15.21%	41.33	32.62	15.78%
6	15.17	16.56	14.68	-3.32%	21.64	17.08	11.17%
7	21.53	23.46	20.80	-3.51%	26.01	20.53	-4.89%
8	15.54	25.91	22.97	32.35%	23.03	18.17	14.49%
9	19.12	20.75	18.40	-3.93%	20.64	16.29	-17.39%
10	18.52	20.01	17.74	-4.39%	23.04	18.18	-1.86%
11	16.88	19.56	17.34	2.67%	20.72	16.35	-3.24%
12	20.42	21.76	19.29	-5.84%	23.77	18.76	-8.86%
13	17.01	17.65	15.65	-8.70%	19.13	15.10	-12.68%
14	16.89	18.63	16.52	-2.25%	27.09	21.38	20.99%
15	14.45	15.07	13.36	-8.15%	19.45	15.35	5.86%
16	18.47	19.92	17.66	-4.58%	20.89	16.49	-12.04%
17	16.75	16.70	14.81	-13.12%	19.14	15.10	-10.90%
18	17.45	27.12	24.05	27.43%	26.28	20.74	15.86%
19	18.44	22.22	19.70	6.40%	22.81	18.00	-2.44%
20	17.99	20.18	17.89	-0.55%	19.70	15.55	-15.72%
21	20.51	17.31	15.35	-33.64%	21.61	17.05	-20.27%
22	21.14	19.56	17.34	-21.90%	23.21	18.32	-15.42%
23	21.54	23.09	20.47	-5.21%	20.89	16.49	-30.66%
24	18.12	22.35	19.82	8.56%	26.99	21.30	14.93%
25	17.67	21.72	19.26	8.25%	26.96	21.28	16.95%
Average Costs	19.55	22.05	19.55	-0.02	24.77	19.55	-0.02
		0.1134			0.2109		
Percent Increase		11.34%			21.09%		

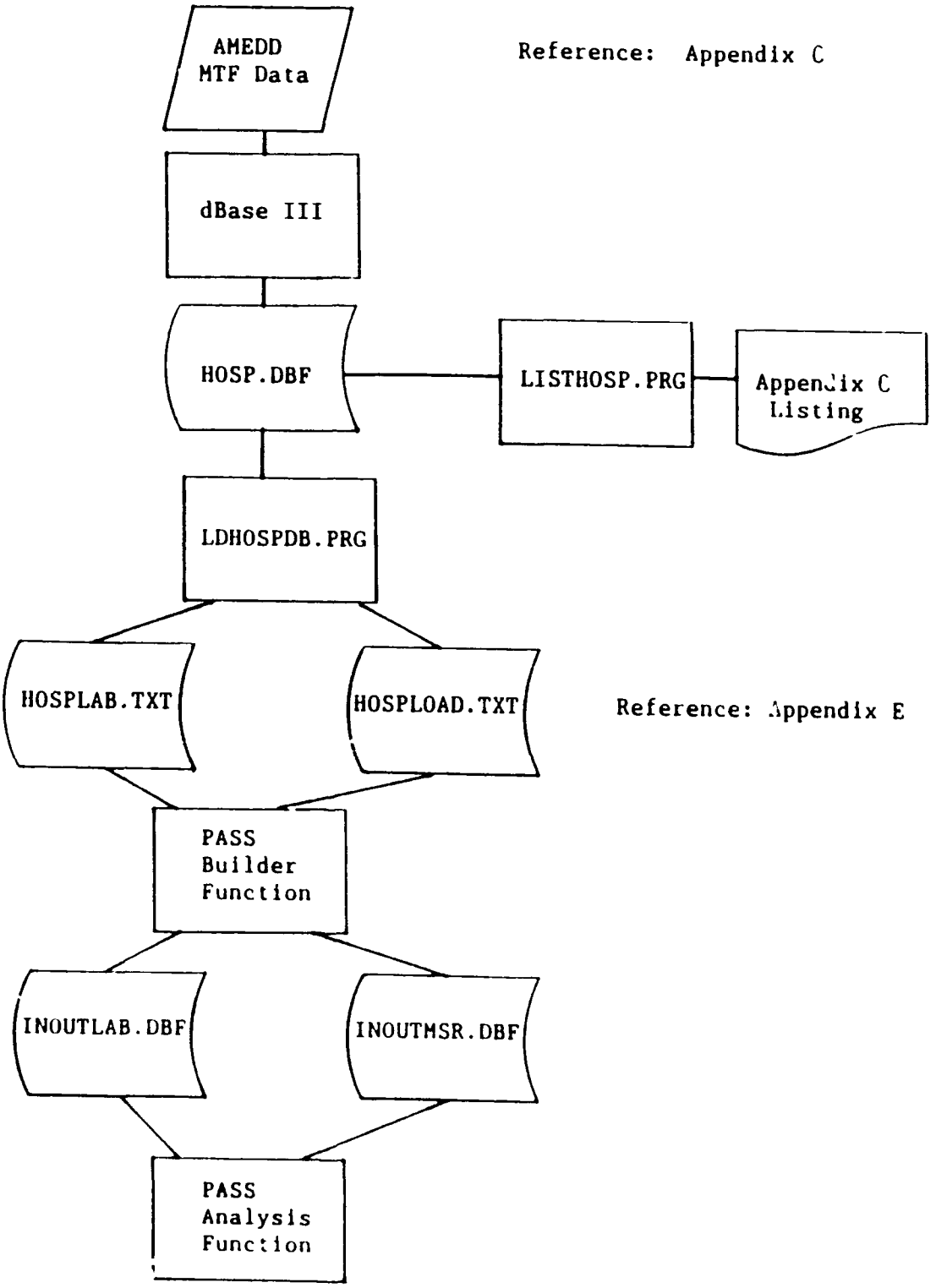
APPENDIX E

PROCESS FLOWCHART

DBASE LOAD PROGRAM

SAMPLE DATA FILES

Flowchart Representing the Processing of AMEDD Medical Treatment Facility Data into the Productivity Analysis Support System



DBASE III Load Program
Labels and Data

```
SET PRINT OFF
SET TALK OFF
SET ALTERNATE TO C:HOSPLAB
SET ALTERNATE ON
*
*  STORE FY85 LABEL DATA
*
STORE "HOSP" TO LEVEL3
STORE "19850931" TO RUNDATE
STORE RUNDATE+',"'+LEVEL3+'","' TO PREFIX
 ? PREFIX+'B","COST_PERS"'
 ? PREFIX+'B","COST_OPER"'
 ? PREFIX+'B","COST_AVST"'
 ? PREFIX+'A","DISP"'
 ? PREFIX+'A","ADM_AD"'
 ? PREFIX+'A","ADM_AN"'
 ? PREFIX+'A","RWPS_TOT"'
 ? PREFIX+'A","RWPS_SHT"'
 ? PREFIX+'A","RWPS_LONG"'
 ? PREFIX+'A","RWPS_XFER"'
 ? PREFIX+'A","AMBV_IP"'
 ? PREFIX+'A","AMBV_OP"'
 ? PREFIX+'B","FTE_AVE"'
 ? PREFIX+'A","FTE_TNGI"'
 ? PREFIX+'A","FTE_TNGR"'
 ? PREFIX+'A","FTE_TNGF"'
 ? PREFIX+'A","FTE_TNG"'
 ? PREFIX+'A","BEDS_AD"'
 ? PREFIX+'A","BEDS_AN"'
 ? PREFIX+'A","VISIT_AD"'
 ? PREFIX+'A","VISIT_AN"'
 ? PREFIX+'B","COST_VST"'
*
*  STORE FY86 LABEL DATA
*
 STORE "19860931" TO RUNDATE
 STORE RUNDATE+',"'+LEVEL3+'","' TO PREFIX
 ? PREFIX+'B","COST_PERS"'
 ? PREFIX+'B","COST_OPER"'
 ? PREFIX+'B","COST_AVST"'
 ? PREFIX+'A","DISP"'
 ? PREFIX+'A","ADM_AD"'
 ? PREFIX+'A","ADM_AN"'
 ? PREFIX+'A","RWPS_TOT"'
 ? PREFIX+'A","RWPS_SHT"'
 ? PREFIX+'A","RWPS_LONG"'
```

```
 ? PREFIX+'A","RWPS_XFER"'
 ? PREFIX+'A","AMBV_IP"'
 ? PREFIX+'A","AMBV_OP"'
 ? PREFIX+'B","FTE_AVE"'
 ? PREFIX+'A","FTE_TNGI"'
 ? PREFIX+'A","FTE_TNGR"'
 ? PREFIX+'A","FTE_TNGF"'
 ? PREFIX+'A","FTE_TNG"'
 ? PREFIX+'A","BEDS_AD"'
 ? PREFIX+'A","BEDS_AN"'
 ? PREFIX+'A","VISIT_AD"'
 ? PREFIX+'A","VISIT_AN"'
 ? PREFIX+'B","COST_VST"'
*
*    STORE FY87 LABEL DATA
*
   STORE "19870931" TO RUNDATE
   STORE RUNDATE+',"'+LEVEL3+'","' TO PREFIX
 ? PREFIX+'B","COST_PERS"'
 ? PREFIX+'B","COST_OPER"'
 ? PREFIX+'B","COST_AVST"'
 ? PREFIX+'A","DISP"'
 ? PREFIX+'A","ADM_AD"'
 ? PREFIX+'A","ADM_AN"'
 ? PREFIX+'A","RWPS_TOT"'
 ? PREFIX+'A","RWPS_SHT"'
 ? PREFIX+'A","RWPS_LONG"'
 ? PREFIX+'A","RWPS_XFER"'
 ? PREFIX+'A","AMBV_IP"'
 ? PREFIX+'A","AMBV_OP"'
 ? PREFIX+'B","FTE_AVE"'
 ? PREFIX+'A","FTE_TNGI"'
 ? PREFIX+'A","FTE_TNGR"'
 ? PREFIX+'A","FTE_TNGF"'
 ? PREFIX+'A","FTE_TNG"'
 ? PREFIX+'A","BEDS_AD"'
 ? PREFIX+'A","BEDS_AN"'
 ? PREFIX+'A","VISIT_AD"'
 ? PREFIX+'A","VISIT_AN"'
 ? PREFIX+'B","COST_VST"'
*
 SET ALTERNATE OFF
CLOSE ALTERNATE
SET TALK ON
```

DBASE III Load Program
Labels and Data

```
SET PRINT OFF
SET TALK OFF
SET ALTERNATE TO C:HOSPLOAD
SET ALTERNATE ON
USE HOSP
GOTO TOP
DO WHILE .NOT. EOF()
*
*  STORE FY85 HOSPITAL DATA
*
 STORE "HOSP" TO LEVEL3
 STORE "19850931" TO RUNDATE
 STORE RUNDATE+',"'+TYPE_HOSP+'","'+HOSP_NUM+'","'+LEVEL3+'",' TO PREFIX
 ? PREFIX+'"COST_PERS",'+STR(COST_PERS5,6)
 ? PREFIX+'"COST_OPER",'+STR(COST_OPER5,6)
 ? PREFIX+'"COST_AVST",'+STR(COST_AVST5,6)
 ? PREFIX+'"DISP",'+STR(DISP5,5)
 ? PREFIX+'"ADM_AD",'+STR(ADM_AD5,6,1)
 ? PREFIX+'"ADM_AN",'+STR(ADM_AN5,7)
 ? PREFIX+'"RWPS_TOT",'+STR(RWPS_TOT5,8,1)
 ? PREFIX+'"RWPS_SHT",'+STR(RWPS_SHT5,6,1)
 ? PREFIX+'"RWPS_LONG",-'+STR(RWPS_LONG5,8,1)
 ? PREFIX+'"RWPS_XFER",'+STR(RWPS_XFER5,6,1)
 ? PREFIX+'"AMBV_IP",'+STR(AMBV_IP5/100,7,2)
 ? PREFIX+'"AMBV_OP",'+STR(AMBV_OP5/100,7,2)
 ? PREFIX+'"FTE_AVE",'+STR(FTE_AVE5,8,1)
 ? PREFIX+'"FTE_TNGI",'+STR(FTE_TNGI5,8,1)
 ? PREFIX+'"FTE_TNGR",'+STR(FTE_TNGR5,8,1)
 ? PREFIX+'"FTE_TNGF",'+STR(FTE_TNGF5,8,1)
 ? PREFIX+'"FTE_TNG",'+STR(FTE_TNG5,7)
 ? PREFIX+'"BEDS_AD",'+STR(BEDS_AD5,7,1)
 ? PREFIX+'"BEDS_AN",'+STR(BEDS_AN5/100,7,2)
 ? PREFIX+'"VISIT_AD",'+STR(VISIT_AD5,7,1)
 ? PREFIX+'"VISIT_AN",'+STR(VISIT_AN5/100,8,2)
 ? PREFIX+'"COST_VST",'+STR(COST_VST5,8,2)
```

```
*
*  STORE FY86 HOSPITAL DATA
*
 STORE "19860931" TO RUNDATE
 STORE RUNDATE+',"'+TYPE_HOSP+'","'+HOSP_NUM+'","'+LEVEL3+'",' TO PREFIX
 ? PREFIX+'"COST_PERS",'+STR(COST_PERS6*(1-.0903),6)
 ? PREFIX+'"COST_OPER",'+STR(COST_OPER6*(1-.0178),6)
 ? PREFIX+'"COST_AVST",'+STR(COST_AVST6*(1-.1134),6)
 ? PREFIX+'"DISP",'+STR(DISP6,5)
 ? PREFIX+'"ADM_AD",'+STR(ADM_AD6,6,1)
 ? PREFIX+'"ADM_AN",'+STR(ADM_AN6,7)
 ? PREFIX+'"RWPS_TOT",'+STR(RWPS_TOT6,8,1)
 ? PREFIX+'"RWPS_SHT",'+STR(RWPS_SHT6,6,1)
 ? PREFIX+'"RWPS_LONG",-'+STR(RWPS_LONG6,8,1)
 ? PREFIX+'"RWPS_XFER",'+STR(RWPS_XFER6,6,1)
 ? PREFIX+'"AMBV_IP",'+STR(AMBV_IP6/100,7,2)
 ? PREFIX+'"AMBV_OP",'+STR(AMBV_OP6/100,7,2)
 ? PREFIX+'"FTE_AVE",'+STR(FTE_AVE6,8,1)
 ? PREFIX+'"FTE_TNGI",'+STR(FTE_TNGI6,8,1)
 ? PREFIX+'"FTE_TNGR",'+STR(FTE_TNGR6,8,1)
 ? PREFIX+'"FTE_TNGF",'+STR(FTE_TNGF6,8,1)
 ? PREFIX+'"FTE_TNG",'+STR(FTE_TNG6,7)
 ? PREFIX+'"BEDS_AD",'+STR(BEDS_AD6,7,1)
 ? PREFIX+'"BEDS_AN",'+STR(BEDS_AN6/100,7,2)
 ? PREFIX+'"VISIT_AD",'+STR(VISIT_AD6,7,1)
 ? PREFIX+'"VISIT_AN",'+STR(VISIT_AN6/100,8,2)
 ? PREFIX+'"COST_VST",'+STR(COST_VST6*(1-.1134),8,2)
```

```
*
*  STORE FY87 HOSPITAL DATA
*
 STORE "19870931" TO RUNDATE
 STORE RUNDATE+',"'+TYPE_HOSP+'","'+HOSP_NUM+'","'+LEVEL3+'",' TO PREFIX
 ? PREFIX+'"COST_PERS",'+STR(COST_PERS7*(1-.1541),6)
 ? PREFIX+'"COST_OPER",'+STR(COST_OPER7*(1-.0609),6)
 ? PREFIX+'"COST_AVST",'+STR(COST_AVST7*(1-.2109),6)
 ? PREFIX+'"DISP",'+STR(DISP7,5)
 ? PREFIX+'"ADM_AD",'+STR(ADM_AD7,6,1)
 ? PREFIX+'"ADM_AN",'+STR(ADM_AN7,7)
 ? PREFIX+'"RWPS_TOT",'+STR(RWPS_TOT7,8,1)
 ? PREFIX+'"RWPS_SHT",'+STR(RWPS_SHT7,6,1)
 ? PREFIX+'"RWPS_LONG",-'+STR(RWPS_LONG7,8,1)
 ? PREFIX+'"RWPS_XFER",'+STR(RWPS_XFER7,6,1)
 ? PREFIX+'"AMBV_IP",'+STR(AMBV_IP7/100,7,2)
 ? PREFIX+'"AMBV_OP",'+STR(AMBV_OP7/100,7,2)
 ? PREFIX+'"FTE_AVE",'+STR(FTE_AVE7,8,1)
 ? PREFIX+'"FTE_TNGI",'+STR(FTE_TNGI7,8,1)
 ? PREFIX+'"FTE_TNGR",'+STR(FTE_TNGR7,8,1)
 ? PREFIX+'"FTE_TNGF",'+STR(FTE_TNGF7,8,1)
 ? PREFIX+'"FTE_TNG",'+STR(FTE_TNG7,7)
 ? PREFIX+'"BEDS_AD",'+STR(BEDS_AD7,7,1)
 ? PREFIX+'"BEDS_AN",'+STR(BEDS_AN7/100,7,2)
 ? PREFIX+'"VISIT_AD",'+STR(VISIT_AD7,7,1)
 ? PREFIX+'"VISIT_AN",'+STR(VISIT_AN7/100,8,2)
 ? PREFIX+'"COST_VST",'+STR(COST_VST7*(1-.2109),8,2)
 SKIP
ENDDO
*
CLOSE DATABASES
SET ALTERNATE OFF
CLOSE ALTERNATE
SET TALK ON
 *
 *
```

Sample File
Data Labels for Data Elements

```
19850931,"HOSP","B","COST_PERS"
19850931,"HOSP","B","COST_OPER"
19850931,"HOSP","B","COST_AVST"
19850931,"HOSP","A","DISP"
19850931,"HOSP","A","ADM_AD"
19850931,"HOSP","A","ADM_AN"
19850931,"HOSP","A","RWPS_TOT"
19850931,"HOSP","A","RWPS_SHT"
19850931,"HOSP","A","RWPS_LONG"
19850931,"HOSP","A","RWPS_XFER"
19850931,"HOSP","A","AMBV_IP"
19850931,"HOSP","A","AMBV_OP"
19850931,"HOSP","B","FTE_AVE"
19850931,"HOSP","A","FTE_TNGI"
19850931,"HOSP","A","FTE_TNGR"
19850931,"HOSP","A","FTE_TNGF"
19850931,"HOSP","A","FTE_TNG"
19850931,"HOSP","A","BEDS_AD"
19850931,"HOSP","A","BEDS_AN"
19850931,"HOSP","A","VISIT_AD"
19850931,"HOSP","A","VISIT_AN"
19850931,"HOSP","B","COST_VST"
19860931,"HOSP","B","COST_PERS"
19860931,"HOSP","B","COST_OPER"
19860931,"HOSP","B","COST_AVST"
19860931,"HOSP","A","DISP"
19860931,"HOSP","A","ADM_AD"
19860931,"HOSP","A","ADM_AN"
19860931,"HOSP","A","RWPS_TOT"
19860931,"HOSP","A","RWPS_SHT"
19860931,"HOSP","A","RWPS_LONG"
19860931,"HOSP","A","RWPS_XFER"
19860931,"HOSP","A","AMBV_IP"
19860931,"HOSP","A","AMBV_OP"
19860931,"HOSP","B","FTE_AVE"
19860931,"HOSP","A","FTE_TNGI"
19860931,"HOSP","A","FTE_TNGR"
19860931,"HOSP","A","FTE_TNGF"
19860931,"HOSP","A","FTE_TNG"
19860931,"HOSP","A","BEDS_AD"
19860931,"HOSP","A","BEDS_AN"
19860931,"HOSP","A","VISIT_AD"
```

Sample List
Hospital Data

```
19850931,"1"," 1","HOSP","COST_PERS", 64043
19850931,"1"," 1","HOSP","COST_OPER", 28679
19850931,"1"," 1","HOSP","COST_AVST", 18063
19850931,"1"," 1","HOSP","DISP",18606
19850931,"1"," 1","HOSP","ADM_AD",  51.8
19850931,"1"," 1","HOSP","ADM_AN",  18907
19850931,"1"," 1","HOSP","RWPS_TOT", 18048.7
19850931,"1"," 1","HOSP","RWPS_SHT", 103.8
19850931,"1"," 1","HOSP","RWPS_LONG",-  5439.0
19850931,"1"," 1","HOSP","RWPS_XFER", 132.3
19850931,"1"," 1","HOSP","AMBV_IP",1943.79
19850931,"1"," 1","HOSP","AMBV_OP",7623.65
19850931,"1"," 1","HOSP","FTE_AVE",  2247.6
19850931,"1"," 1","HOSP","FTE_TNGI",    65.0
19850931,"1"," 1","HOSP","FTE_TNGR",   118.2
19850931,"1"," 1","HOSP","FTE_TNGF",    13.3
19850931,"1"," 1","HOSP","FTE_TNG",    183
19850931,"1"," 1","HOSP","BEDS_AD",  392.0
19850931,"1"," 1","HOSP","BEDS_AN",1430.80
19850931,"1"," 1","HOSP","VISIT_AD", 2621.2
19850931,"1"," 1","HOSP","VISIT_AN", 9567.38
19850931,"1"," 1","HOSP","COST_VST",   18.88
19860931,"1"," 1","HOSP","COST_PERS", 64852
19860931,"1"," 1","HOSP","COST_OPER", 26244
19860931,"1"," 1","HOSP","COST_AVST", 16612
19860931,"1"," 1","HOSP","DISP",18194
19860931,"1"," 1","HOSP","ADM_AD",  51.6
19860931,"1"," 1","HOSP","ADM_AN",  18834
19860931,"1"," 1","HOSP","RWPS_TOT", 17335.2
19860931,"1"," 1","HOSP","RWPS_SHT", 133.5
19860931,"1"," 1","HOSP","RWPS_LONG",-  4605.1
19860931,"1"," 1","HOSP","RWPS_XFER",  74.0
19860931,"1"," 1","HOSP","AMBV_IP",1803.73
19860931,"1"," 1","HOSP","AMBV_OP",7899.42
19860931,"1"," 1","HOSP","FTE_AVE",  2439.9
19860931,"1"," 1","HOSP","FTE_TNGI",    59.2
19860931,"1"," 1","HOSP","FTE_TNGR",   126.9
19860931,"1"," 1","HOSP","FTE_TNGF",    12.7
19860931,  "," 1","HOSP","FTE_TNG",    186
19860931,"1"," 1","HOSP","BEDS_AD",  348.8
19860931,"1"," 1","HOSP","BEDS_AN",1273.12
19860931,"1"," 1","HOSP","VISIT_AD", 2658.4
19860931,"1"," 1","HOSP","VISIT_AN", 9703.16
19860931,"1"," 1","HOSP","COST_VST",   17.12
19870931,"1"," 1","HOSP","COST_PERS", 64546
```

APPENDIX F

EFFICIENCY ANALYSIS OF MEDICAL-SURGICAL (MS) AREA OF TEACHING HOSPITALS

INPUTS AND OUTPUTS DATA USED FOR DEA EVALUATIONS MEDICAL-SURGICAL (MS) AREA OF TEACHING HOSPITALS

INPUTS

HOSPITAL	FULL TIME EQUIVALENT NONPHYSICIAN	SUPPLY DOLLARS	BED DAYS AVAILABLE
A	310.0	134.600	116,000
B	278.0	114,300	106,800
C	165.6	131,300	65,520
D	250.0	316,000	94,400
E	206.4	151,200	102,100
F	384.6	217,000	153,700
G	530.1	770,800	215,000

OUTPUTS

HOSPITAL	PATIENT DAYS 65 YEARS OF AGE	PATIENT DAYS 65 YEARS OF AGE	NO. OF NURSE STUDENTS	NO. OF INTERNS AND RESIDENTS IN TRAINING
A	55,310	49,520	291	47
B	37,640	55,630	156	3
C	32,910	25,770	141	26
D	33,530	41,990	160	21
E	32,480	55,300	157	82
F	48,780	81,920	285	92
G	58,410	119,700	144	89

Date: 07/29/90

Medical-Surgical Teaching Hospital Analysis

Efficiency Report for Med-Surg: MS
Region 1 : Region 1
Hospital D : Hosp D
Date: 07/01/89

Efficiency: 90.730 to 90.730

Multiplier for Adjusting Output Levels = 1.1022

OUTPUTS

	Output Levels	Adjusted Output Levels	Percent Contribution To Efficiency	Shortage
INT-RES	23.146	25.511	0.000	7.668
NURS-STU	176.347	194.365	3.456	
PNT-DYOLD	36955.803	40731.625	33.260	
PNT-DYYNG	46280.172	51008.676	64.792	

Total: 101.509 PERCENT

INPUTS

	Input Levels	Relative Productivity of Inputs	Excess
BED-DAYS	94.400	99.998	
FTE-NPHYS	250.000	0.000	12.161
SUPPLY-DOL	316.000	0.000	184.630

Total: 100.000 PERCENT

Date: 07/29/90

Medical-Surgical Teaching Hospital Analysis

Efficiency Report for Med-Surg: MS
Region 1 : Region 1
Hospital D : Hosp D
Date: 07/01/89

Efficiency: 90.730 to 90.730

Multiplier for Adjusting Input Levels = 0.9073

OUTPUTS

	Output Levels	Percent Contribution To Efficiency	Shortage
INT-RES	23.146	0.000	7.668
NURS-STU	176.347	3.456	
PNT-DYOLD	36955.803	33.260	
PNT-DYYNG	46280.172	64.792	
	Total:	101.509 PERCENT	

INPUTS

	Input Levels	Adjusted Input Levels	Relative Productivity of Inputs	Excess
BED-DAYS	94.400	85.649	99.998	
FTE-NPHYS	250.000	226.825	0.000	12.161
SUPPLY-DOL	316.000	286.707	0.000	184.630
	Total:	100.000 PERCENT		

07/29/90

Medical-Surgical Teaching Hospital Analysis

SUMMARY OF LOCAL FRONTIERS
FOR MED-SURG MS

Analysis Description:
DEA Model - Sherman - 10 May 1990

Dates:
07/01/89

Outputs:
INT-RES, NURS-STU, PNT-DYOLD, PNT-DYYNG

Inputs:
BED-DAYS, FTE-NPHYS, SUPPLY-DOL

COMPLETE FRONTIERS

INCOMPLETE FRONTIERS

1.	07/01/89	1	B
	07/01/89	1	E
	07/01/89	1	A

07/29/90

MEDICAL-SURGICAL TEACHING HOSPITAL ANALYSIS

EFFICIENCY COMPARISON FOR MULTIPLE EFFICIENCY ANALYSES

FOR MED-SURG: MS

Analysis # 59
DEA Model - Sherman - 10 May 1990

Dates:
07/01/89

Outputs:
INT-RES, NURS-STU, PNT-DYOLD, PNT-DYYNG

Inputs:
BED-DAYS, FTE-NPHYS, SUPPLY-DOL

07/29/90

MEDICAL-SURGICAL TEACHING HOSPITAL ANALYSIS

EFFICIENCY COMPARISON FOR MULTIPLE EFFICIENCY ANALYSES

FOR MED-SURG: MS

Date/Region	/Hospital	UPPER 1	UPPER Avg	LOWER 1	LOWER Avg
07/01/89 1	A	1.000	1.000	1.000	1.000
07/01/89 1	B	1.000	1.000	1.000	1.000
07/01/89 1	C	1.000	1.000	1.000	1.000
07/01/89 1	D	0.907	0.907	0.907	0.907
07/01/89 1	E	1.000	1.000	1.000	1.000
07/01/89 1	F	1.000	1.000	1.000	1.000
07/01/89 1	G	1.000	1.000	1.000	1.000
MIN		0.907	0.907	0.907	0.907
MAX		1.000	1.000	0.907	0.907
# Enveloped		0		0	
# Efficient		6			
# Inefficient		1			
Total Cases		7			

APPENDIX G

PEARSON CORRELATION MATRIX

AMEDD HOSPITAL DATA FISCAL YEARS 1985-1987

Pearson Correlation Matrix

AMEDD Hospital Data

FY85-87

INPUT VARIABLES

Correlations:	C_PERS5	C_PERS6	C_PERS7	C_OPER5	C_OPER6	C_OPER7
C_PERS5	1.0000	.9973**	.9953**	.9502**	.9476**	.9510**
C_PERS6	.9973**	1.0000	.9952**	.9491**	.9416**	.9429**
C_PERS7	.9953**	.9952**	1.0000	.9468**	.9444**	.9560**
C_OPER5	.9502**	.9491**	.9468**	1.0000	.9832**	.9721**
C_OPER6	.9476**	.9416**	.9444**	.9832**	1.0000	.9852**
C_OPER7	.9510**	.9429**	.9560**	.9721**	.9852**	1.0000
F_AVE5	.9524**	.9555**	.9288**	.9310**	.9204**	.8818**
F_AVE6	.9583**	.9602**	.9358**	.9334**	.9243**	.8911**
F_AVE7	.9589**	.9589**	.9363**	.9349**	.9240**	.8937**
C_VST5	.2118	.2011	.2056	.3676	.3698	.3518
C_VST6	.4197	.4316	.4295	.5489*	.5218*	.4988*
C_VST7	.2885	.2945	.3080	.4637*	.4762*	.4528
C_AVST5	.7878**	.7543**	.7764**	.8138**	.8349**	.8557**
C_AVST6	.8901**	.8695**	.8826**	.8995**	.9029**	.9178**
C_AVST7	.8400**	.8159**	.8445**	.8764**	.9002**	.9231**

N of cases: 25 1-tailed Signif: * - .01 ** - .001

" . " is printed if a coefficient cannot be computed

Correlations:	F_AVE5	F_AVE6	F_AVE7	C_VST5	C_VST6	C_VST7
C_PERS5	.9524**	.9583**	.9589**	.2118	.4197	.2885
C_PERS6	.9555**	.9602**	.9589**	.2011	.4316	.2945
C_PERS7	.9288**	.9358**	.9363**	.2056	.4295	.3080
C_OPER5	.9310**	.9334**	.9349**	.3676	.5489*	.4637*
C_OPER6	.9204**	.9243**	.9240**	.3698	.5218*	.4762*
C_OPER7	.8818**	.8911**	.8937**	.3518	.4988*	.4528
F_AVE5	1.0000	.9970**	.9950**	.2856	.4823*	.3520
F_AVE6	.9970**	1.0000	.9977**	.3007	.4858*	.3566
F_AVE7	.9950**	.9977**	1.0000	.2945	.4760*	.3533
C_VST5	.2856	.3007	.2945	1.0000	.7700**	.8000**
C_VST6	.4823*	.4858*	.4760*	.7700**	1.0000	.8540**
C_VST7	.3520	.3566	.3533	.8000**	.8540**	1.0000
C_AVST5	.7347**	.7573**	.7714**	.5428*	.5383*	.4987*
C_AVST6	.8426**	.8588**	.8664**	.4556	.6024**	.4862*
C_AVST7	.7660**	.7838**	.7938**	.4822*	.5610*	.5683*

Correlations:	C_AVST5	C_AVST6	C_AVST7
C_PERS5	.7878**	.8901**	.8400**
C_PERS6	.7543**	.8695**	.8159**
C_PERS7	.7764**	.8826**	.8445**
C_OPER5	.8138**	.8995**	.8764**
C_OPER6	.8349**	.9029**	.9002**
C_OPER7	.8557**	.9178**	.9231**
F_AVE5	.7347**	.8426**	.7660**
F_AVE6	.7573**	.8588**	.7838**
F_AVE7	.7714**	.8664**	.7938**
C_VST5	.5428*	.4556	.4822*
C_VST6	.5383*	.6024**	.5610*
C_VST7	.4987*	.4862*	.5683*
C_AVST5	1.0000	.9604**	.9630**
C_AVST6	.9604**	1.0000	.9640**
C_AVST7	.9630**	.9640**	1.0000

N of cases: 25 1-tailed Signif: * - .01 ** - .001

" . " is printed if a coefficient cannot be computed

OUTPUT VARIABLES

Correlations:	DISP5	DISP6	DISP7	ADM_AD5	ADM_AD6	ADM_AD7
DISP5	1.0000	.9906**	.9895**	.9964**	.9859**	.9899**
DISP6	.9906**	1.0000	.9912**	.9912**	.9908**	.9922**
DISP7	.9895**	.9912**	1.0000	.9920**	.9889**	.9997**
ADM_AD5	.9964**	.9912**	.9920**	1.0000	.9940**	.9919**
ADM_AD6	.9859**	.9908**	.9889**	.9940**	1.0000	.9890**
ADM_AD7	.9899**	.9922**	.9997**	.9919**	.9890**	1.0000
R_TOT5	.8978**	.8921**	.8995**	.9085**	.9206**	.9033**
R_TOT6	.9059**	.9092**	.9113**	.9164**	.9309**	.9161**
R_TOT7	.8970**	.8940**	.9027**	.9114**	.9268**	.9069**
R_SHT5	.8305**	.8444**	.8238**	.8255**	.8303**	.8342**
R_SHT6	.8582**	.8664**	.8476**	.8493**	.8491**	.8562**
R_SHT7	.8446**	.8490**	.8433**	.8470**	.8553**	.8515**
R_LONG5	.7422**	.7356**	.7520**	.7670**	.7981**	.7550**
R_LONG6	.7735**	.7734**	.7823**	.7944**	.8242**	.7875**
R_LONG7	.7327**	.7261**	.7363**	.7560**	.7857**	.7408**
R_XFER5	.1254	.1648	.0955	.0985	.1027	.0974
R_XFER6	.2274	.2605	.1902	.2002	.2041	.1902
R_XFER7	.2368	.2700	.2202	.2225	.2388	.2214
AMBV_IP5	.7497**	.7396**	.7554**	.7572**	.7671**	.7640**
AMBV_IP6	.7621**	.7528**	.7662**	.7629**	.7651**	.7768**
AMBV_IP7	.7857**	.7699**	.7934**	.7889**	.7874**	.8017**
AMBV_OP5	.9333**	.9507**	.9378**	.9345**	.9351**	.9394**
AMBV_OP6	.9257**	.9436**	.9338**	.9262**	.9309**	.9348**
AMBV_OP7	.9358**	.9511**	.9426**	.9357**	.9396**	.9433**
F_TNGI5	.7331**	.7081**	.7497**	.7264**	.7096**	.7507**
F_TNGI6	.7880**	.7699**	.8041**	.7799**	.7664**	.8054**
F_TNGI7	.7632**	.7341**	.7674**	.7531**	.7383**	.7678**
F_TNGR5	.8271**	.8197**	.8198**	.8222**	.8205**	.8265**
F_TNGR6	.8633**	.8544**	.8587**	.8634**	.8659**	.8644**
F_TNGR7	.8325**	.8295**	.8233**	.8374**	.8461**	.8301**
F_TNGF5	.6166**	.6039**	.6207**	.6354**	.6561**	.6299**
F_TNGF6	.6350**	.6237**	.6416**	.6555**	.6771**	.6507**
F_TNGF7	.6577**	.6356**	.6678**	.6784**	.6911**	.6741**
BEDS_AD5	.8499**	.8429**	.8573**	.8716**	.8937**	.8591**
BEDS_AD6	.8524**	.8493**	.8596**	.8750**	.9001**	.8618**
BEDS_AD7	.8680**	.8614**	.8761**	.8883**	.9098**	.8777**
V_AD5	.9494**	.9591**	.9529**	.9523**	.9558**	.9567**
V_AD6	.9459**	.9558**	.9516**	.9461**	.9501**	.9558**
V_AD7	.9550**	.9612**	.9625**	.9560**	.9585**	.9658**
ADM_AN5	.9964**	.9912**	.9920**	1.0000**	.9940**	.9919**
ADM_AN6	.9859**	.9908**	.9889**	.9940**	1.0000**	.9890**
ADM_AN7	.9899**	.9922**	.9997**	.9919**	.9890**	1.0000**
F_TNG5	.8311**	.8194**	.8290**	.8256**	.8204**	.8346**
F_TNG6	.8666**	.8552**	.8665**	.8647**	.8636**	.8713**
F_TNG7	.8511**	.8420**	.8445**	.8528**	.8565**	.8502**
BEDS_AN5	.8499**	.8429**	.8573**	.8716**	.8937**	.8591**
BEDS_AN6	.8524**	.8493**	.8595**	.8750**	.9000**	.8618**
BEDS_AN7	.8679**	.8614**	.8760**	.8882**	.9097**	.8776**
V_AN5	.9494**	.9592**	.9529**	.9523**	.9558**	.9567**
V_AN6	.9459**	.9558**	.9516**	.9461**	.9501**	.9558**
V_AN7	.9550**	.9612**	.9625**	.9560**	.9585**	.9658**

Correlations:	R_TOT5	R_TOT6	R_TOT7	R_SHT5	R_SHT6	R_SHT7
DISP5	.8978**	.9059**	.8970**	.8305**	.8582**	.8446**
DISP6	.8921**	.9092**	.8940**	.8444**	.8664**	.8490**
DISP7	.8995**	.9113**	.9027**	.8238**	.8476**	.8433**
ADM_AD5	.9085**	.9164**	.9114**	.8255**	.8493**	.8470**
ADM_AD6	.9206**	.9309**	.9268**	.8303**	.8491**	.8553**
ADM_AD7	.9033**	.9161**	.9069**	.8342**	.8562**	.8515**
R_TOT5	1.0000	.9959**	.9925**	.8458**	.8456**	.8647**
R_TOT6	.9959**	1.0000	.9929**	.8758**	.8752**	.8889**
R_TOT7	.9925**	.9929**	1.0000	.8598**	.8511**	.8815**
R_SHT5	.8458**	.8758**	.8598**	1.0000	.9524**	.9472**
R_SHT6	.8456**	.8752**	.8511**	.9524**	1.0000	.9634**
R_SHT7	.8647**	.8889**	.8815**	.9472**	.9634**	1.0000
R_LONG5	.9477**	.9320**	.9426**	.7151**	.7183**	.7801**
R_LONG6	.9630**	.9578**	.9636**	.7851**	.7884**	.8365**
R_LONG7	.9461**	.9340**	.9491**	.7471**	.7336**	.7903**
R_XFER5	-.1209	-.0915	-.1185	.0613	-.0170	-.0683
R_XFER6	-.0378	-.0050	-.0242	.1625	.1259	.0760
R_XFER7	.0181	.0456	.0495	.1685	.0516	.0606
AMBV_IP5	.9373**	.9290**	.9201**	.7646**	.7499**	.7774**
AMBV_IP6	.9175**	.9202**	.9104**	.8262**	.8146**	.8225**
AMBV_IP7	.9249**	.9250**	.9233**	.8241**	.8113**	.8272**
AMBV_OP5	.7903**	.8134**	.8045**	.7825**	.7544**	.7475**
AMBV_OP6	.7808**	.8022**	.7961**	.7459**	.7250**	.7215**
AMBV_OP7	.7998**	.8212**	.8167**	.7683**	.7546**	.7489**
F_TNGI5	.8128**	.7934**	.7631**	.6194**	.6630**	.6433**
F_TNGI6	.8487**	.8370**	.8080**	.6960**	.7281**	.7046**
F_TNGI7	.8412**	.8183**	.7938**	.6259**	.6662**	.6351**
F_TNGR5	.9366**	.9408**	.9125**	.8669**	.8963**	.8763**
F_TNGR6	.9699**	.9700**	.9521**	.8714**	.8753**	.8757**
F_TNGR7	.9572**	.9604**	.9447**	.8853**	.8754**	.8876**
F_TNGF5	.8716**	.8610**	.8732**	.7009**	.6495**	.7123**
F_TNGF6	.8774**	.8702**	.8868**	.7248**	.6731**	.7416**
F_TNGF7	.8772**	.8643**	.8900**	.7022**	.6533**	.7186**
BEDS_AD5	.9788**	.9670**	.9743**	.7702**	.7802**	.8332**
BEDS_AD6	.9790**	.9710**	.9809**	.7879**	.7921**	.8447**
BEDS_AD7	.9839**	.9745**	.9848**	.7870**	.7944**	.8404**
V_AD5	.8965**	.9116**	.9024**	.8326**	.8079**	.8136**
V_AD6	.8864**	.9033**	.8959**	.8265**	.8081**	.8103**
V_AD7	.8999**	.9159**	.9119**	.8431**	.8286**	.8297**
ADM_AN5	.9085**	.9164**	.9114**	.8255**	.8493**	.8470**
ADM_AN6	.9206**	.9309**	.9268**	.8303**	.8491**	.8553**
ADM_AN7	.9033**	.9161**	.9069**	.8342**	.8562**	.8515**
F_TNG5	.9371**	.9360**	.9064**	.8367**	.8700**	.8496**
F_TNG6	.9649**	.9623**	.9415**	.8510**	.8618**	.8568**
F_TNG7	.9699**	.9674**	.9491**	.8627**	.8640**	.8666**
BEDS_AN5	.9788**	.9670**	.9743**	.7703**	.7802**	.8333**
BEDS_AN6	.9791**	.9710**	.9809**	.7880**	.7921**	.8447**
BEDS_AN7	.9838**	.9745**	.9848**	.7870**	.7944**	.8404**
V_AN5	.8965**	.9116**	.9024**	.8326**	.8079**	.8136**
V_AN6	.8864**	.9033**	.8959**	.8265**	.8081**	.8103**
V_AN7	.8999**	.9159**	.9119**	.8431**	.8286**	.8297**

Correlations:	R_LONG5	R_LONG6	R_LONG7	R_XFER5	R_XFER6	R_XFER7
DISP5	.7422**	.7735**	.7327**	.1254	.2274	.2368
DISP6	.7356**	.7734**	.7261**	.1648	.2605	.2700
DISP7	.7520**	.7823**	.7363**	.0955	.1902	.2202
ADM_AD5	.7670**	.7944**	.7560**	.0985	.2002	.2225
ADM_AD6	.7981**	.8242**	.7857**	.1027	.2041	.2388
ADM_AD7	.7550**	.7875**	.7408**	.0974	.1902	.2214
R_TOT5	.9477**	.9630**	.9461**	-.1209	-.0378	.0181
R_TOT6	.9320**	.9578**	.9340**	-.0915	-.0050	.0456
R_TOT7	.9426**	.9636**	.9491**	-.1185	-.0242	.0495
R_SHT5	.7151**	.7851**	.7471**	.0613	.1625	.1685
R_SHT6	.7183**	.7884**	.7336**	-.0170	.1259	.0516
R_SHT7	.7801**	.8365**	.7903**	-.0683	.0760	.0606
R_LONG5	1.0000	.9903**	.9906**	-.2561	-.1817	-.1055
R_LONG6	.9903**	1.0000	.9911**	-.2331	-.1497	-.0800
R_LONG7	.9906**	.9911**	1.0000	-.2441	-.1637	-.0839
R_XFER5	-.2561	-.2331	-.2441	1.0000	.9027**	.8518**
R_XFER6	-.1817	-.1497	-.1637	.9027**	1.0000	.8730**
R_XFER7	-.1055	-.0800	-.0839	.8518**	.8730**	1.0000
AMBV_IP5	.9107**	.9269**	.9112**	-.2755	-.2280	-.1387
AMBV_IP6	.8560**	.8941**	.8704**	-.2771	-.2081	-.1428
AMBV_IP7	.8616**	.8936**	.8754**	-.2993	-.2272	-.1535
AMBV_OP5	.6058**	.6483**	.6042**	.2753	.3433	.4393
AMBV_OP6	.6071**	.6443**	.6002**	.3081	.3707	.4681*
AMBV_OP7	.6322**	.6707**	.6312**	.2896	.3444	.4198
F_TNGI5	.7212**	.7167**	.6816**	-.2807	-.2743	-.2375
F_TNGI6	.7370**	.7433**	.7088**	-.2098	-.1811	-.1582
F_TNGI7	.7483**	.7430**	.7189**	-.2214	-.1905	-.1815
F_TNGR5	.8616**	.8990**	.8688**	-.1813	-.1140	-.1279
F_TNGR6	.8970**	.9264**	.9039**	-.1534	-.0957	-.0612
F_TNGR7	.9000**	.9323**	.9150**	-.1381	-.0708	-.0267
F_TNGF5	.9149**	.9245**	.9367**	-.3054	-.2567	-.1441
F_TNGF6	.9173**	.9305**	.9411**	-.3046	-.2476	-.1315
F_TNGF7	.9018**	.9078**	.9251**	-.3556	-.2983	-.1709
BEDS_AD5	.9782**	.9744**	.9627**	-.1821	-.0966	-.0216
BEDS_AD6	.9773**	.9787**	.9682**	-.1590	-.0666	.0100
BEDS_AD7	.9728**	.9739**	.9634**	-.1585	-.0690	.0079
V_AD5	.7471**	.7849**	.7474**	.1297	.1933	.2927
V_AD6	.7358**	.7765**	.7368**	.1446	.2102	.3027
V_AD7	.7546**	.7938**	.7584**	.1175	.1820	.2624
ADM_AN5	.7670**	.7944**	.7560**	.0985	.2002	.2225
ADM_AN6	.7981**	.8242**	.7857**	.1027	.2041	.2388
ADM_AN7	.7550**	.7875**	.7408**	.0974	.1902	.2214
F_TNG5	.8560**	.8848**	.8527**	-.2095	-.1542	.1568
F_TNG6	.8815**	.9062**	.8804**	-.1700	-.1173	-.0848
F_TNG7	.9022**	.9273**	.9078**	-.1624	-.1000	-.0625
BEDS_AN5	.9782**	.9744**	.9626**	-.1820	-.0965	-.0216
BEDS_AN6	.9774**	.9787**	.9683**	-.1590	-.0667	.0099
BEDS_AN7	.9728**	.9739**	.9634**	-.1586	-.0690	.0079
V_AN5	.7471**	.7848**	.7474**	.1297	.1934	.2928
V_AN6	.7358**	.7765**	.7368**	.1447	.2102	.3027
V_AN7	.7546**	.7938**	.7584**	.1175	.1820	.2624

Correlations:	AMBV_IP5	AMBV_IP6	AMBV_IP7	AMBV_OP5	AMBV_OP6	AMBV_OP7
DISP5	.7497**	.7621**	.7857**	.9333**	.9257**	.9358**
DISP6	.7396**	.7528**	.7699**	.9507**	.9436**	.9511**
DISP7	.7554**	.7662**	.7934**	.9378**	.9338**	.9426**
ADM_AD5	.7572**	.7629**	.7889**	.9345**	.9262**	.9357**
ADM_AD6	.7671**	.7651**	.7874**	.9351**	.9309**	.9396**
ADM_AD7	.7640**	.7768**	.8017**	.9394**	.9348**	.9433**
R_TOT5	.9373**	.9175**	.9249**	.7903**	.7808**	.7998**
R_TOT6	.9290**	.9202**	.9250**	.8134**	.8022**	.8212**
R_TOT7	.9201**	.9104**	.9233**	.8045**	.7961**	.8167**
R_SHT5	.7646**	.8262**	.8241**	.7825**	.7459**	.7683**
R_SHT6	.7499**	.8146**	.8113**	.7544**	.7250**	.7546**
R_SHT7	.7774**	.8225**	.8272**	.7475**	.7215**	.7489**
R_LONG5	.9107**	.8560**	.8616**	.6058**	.6071**	.6322**
R_LONG6	.9269**	.8941**	.8936**	.6483**	.6443**	.6707**
R_LONG7	.9112**	.8704**	.8754**	.6042**	.6002**	.6312**
R_XFER5	-.2755	-.2771	-.2993	.2753	.3081	.2896
R_XFER6	-.2280	-.2081	-.2272	.3433	.3707	.3444
R_XFER7	-.1387	-.1428	-.1535	.4393	.4681*	.4198
AMBV_IP5	1.0000	.9802**	.9629**	.6496**	.6384**	.6466**
AMBV_IP6	.9802**	1.0000	.9869**	.6710**	.6512**	.6654**
AMBV_IP7	.9629**	.9869**	1.0000	.6898**	.6662**	.6898**
AMBV_OP5	.6496**	.6710**	.6898**	1.0000	.9919**	.9847**
AMBV_OP6	.6384**	.6512**	.6662**	.9919**	1.0000	.9902**
AMBV_OP7	.6466**	.6654**	.6898**	.9847**	.9902**	1.0000
F_TNGI5	.8422**	.8206**	.8357**	.5962**	.5796*	.5870*
F_TNGI6	.8493**	.8405**	.8605**	.6582**	.6411**	.6532**
F_TNGI7	.8509**	.8231**	.8339**	.6034**	.5940**	.6010**
F_TNGR5	.9056**	.9181**	.9141**	.6830**	.6591**	.6969**
F_TNGR6	.9296**	.9291**	.9308**	.7423**	.7226**	.7552**
F_TNGR7	.9094**	.9076**	.9038**	.7261**	.7013**	.7352**
F_TNGF5	.9298**	.9046**	.9015**	.5100*	.4952*	.5188*
F_TNGF6	.9231**	.9062**	.9100**	.5346*	.5188*	.5450*
F_TNGF7	.9088**	.8991**	.9295**	.5519*	.5315*	.5639*
BEDS_AD5	.9101**	.8641**	.8740**	.7331**	.7326**	.7491**
BEDS_AD6	.9005**	.8596**	.8700**	.7421**	.7408**	.7587**
BEDS_AD7	.9013**	.8633**	.8785**	.7538**	.7529**	.7728**
V_AD5	.8082**	.8178**	.8260**	.9712**	.9630**	.9626**
V_AD6	.8003**	.8161**	.8224**	.9674**	.9685**	.9686**
V_AD7	.7984**	.8201**	.8423**	.9598**	.9563**	.9712**
ADM_AN5	.7572**	.7629**	.7889**	.9345**	.9262**	.9357**
ADM_AN6	.7671**	.7652**	.7874**	.9352**	.9309**	.9397**
ADM_AN7	.7640**	.7768**	.8017**	.9394**	.9348**	.9433**
F_TNG5	.9190**	.9240**	.9244**	.6841**	.6611**	.6930**
F_TNG6	.9329**	.9304**	.9364**	.7405**	.7211**	.7497**
F_TNG7	.9327**	.9251**	.9246**	.7281**	.7058**	.7349**
BEDS_AN5	.9101**	.8640**	.8740**	.7331**	.7326**	.7491**
BEDS_AN6	.9006**	.8597**	.8700**	.7420**	.7407**	.7585**
BEDS_AN7	.9013**	.8633**	.8785**	.7537**	.7528**	.7728**
V_AN5	.8082**	.8178**	.8260**	.9712**	.9630**	.9626**
V_AN6	.8003**	.8161**	.8224**	.9674**	.9685**	.9686**
V_AN7	.7984**	.8201**	.8423**	.9598**	.9563**	.9712**

Correlations:	F_TNGI5	F_TNGI6	F_TNGI7	F_TNGR5	F_TNGR6	F_TNGR7
DISP5	.7331**	.7880**	.7632**	.8271**	.8633**	.8325**
DISP6	.7081**	.7699**	.7341**	.8197**	.8544**	.8295**
DISP7	.7497**	.8041**	.7674**	.8198**	.8587**	.8233**
ADM_AD5	.7264**	.7799**	.7531**	.8222**	.8634**	.8374**
ADM_AD6	.7096**	.7664**	.7383**	.8205**	.8659**	.8461**
ADM_AD7	.7507**	.8054**	.7678**	.8265**	.8644**	.8301**
R_TOT5	.8128**	.8487**	.8412**	.9366**	.9699**	.9572**
R_TOT6	.7934**	.8370**	.8183**	.9408**	.9700**	.9604**
R_TOT7	.7631**	.8080**	.7938**	.9125**	.9521**	.9447**
R_SHT5	.6194**	.6960**	.6259**	.8669**	.8714**	.8853**
R_SHT6	.6630**	.7281**	.6662**	.8963**	.8753**	.8754**
R_SHT7	.6433**	.7046**	.6351**	.8763**	.8757**	.8876**
R_LONG5	.7212**	.7370**	.7483**	.8616**	.8970**	.9000**
R_LONG6	.7167**	.7433**	.7430**	.8990**	.9264**	.9323**
R_LONG7	.6816**	.7088**	.7189**	.8688**	.9039**	.9150**
R_XFER5	-.2807	-.2098	-.2214	-.1813	-.1534	-.1381
R_XFER6	-.2743	-.1811	-.1905	-.1140	-.0957	-.0708
R_XFER7	-.2375	-.1582	-.1815	-.1279	-.0612	-.0267
AMBV_IP5	.8422**	.8493**	.8509**	.9056**	.9296**	.9094**
AMBV_IP6	.8206**	.8405**	.8231**	.9181**	.9291**	.9076**
AMBV_IP7	.8357**	.8605**	.8339**	.9141**	.9308**	.9038**
AMBV_OP5	.5962**	.6582**	.6034**	.6830**	.7423**	.7261**
AMBV_OP6	.5796*	.6411**	.5940**	.6591**	.7226**	.7013**
AMBV_OP7	.5870*	.6532**	.6010**	.6969**	.7552**	.7352**
F_TNGI5	1.0000	.9871**	.9722**	.8317**	.8355**	.7670**
F_TNGI6	.9871**	1.0000	.9785**	.8628**	.8704**	.8063**
F_TNGI7	.9722**	.9785**	1.0000	.8337**	.8478**	.7762**
F_TNGR5	.8317**	.8628**	.8337**	1.0000	.9870**	.9749**
F_TNGR6	.8355**	.8704**	.8478**	.9870**	1.0000	.9884**
F_TNGR7	.7670**	.8063**	.7762**	.9749**	.9884**	1.0000
F_TNGF5	.6557**	.6735**	.6891**	.8162**	.8531**	.8578**
F_TNGF6	.6439**	.6675**	.6731**	.8164**	.8549**	.8617**
F_TNGF7	.6917**	.7154**	.7166**	.8043**	.8479**	.8399**
BEDS_AD5	.7723**	.7943**	.7926**	.8817**	.9238**	.9187**
BEDS_AD6	.7414**	.7722**	.7693**	.8770**	.9206**	.9208**
BEDS_AD7	.7625**	.7934**	.7917**	.8838**	.9274**	.9203**
V_AD5	.7124**	.7622**	.7208**	.8068**	.8604**	.8428**
V_AD6	.6984**	.7511**	.7100**	.7981**	.8499**	.8277**
V_AD7	.7116**	.7690**	.7216**	.8196**	.8686**	.8449**
ADM_AN5	.7264**	.7799**	.7531**	.8222**	.8634**	.8374**
ADM_AN6	.7096**	.7664**	.7383**	.8205**	.8659**	.8461**
ADM_AN7	.7507**	.8054**	.7678**	.8265**	.8643**	.8301**
F_TNG5	.8958**	.9177**	.8912**	.9918**	.9825**	.9569**
F_TNG6	.8899**	.9205**	.8978**	.9814**	.9936**	.9695**
F_TNG7	.8442**	.8777**	.8582**	.9824**	.9965**	.9898**
BEDS_AN5	.7723**	.7943**	.7926**	.8817**	.9238**	.9187**
BEDS_AN6	.7415**	.7723**	.7694**	.8771**	.9207**	.9208**
BEDS_AN7	.7624**	.7933**	.7916**	.8838**	.9273**	.9203**
V_AN5	.7124**	.7622**	.7208**	.8068**	.8604**	.8428**
V_AN6	.6984**	.7511**	.7100**	.7981**	.8499**	.8277**
V_AN7	.7116**	.7690**	.7215**	.8196**	.8686**	.8449**

Correlations:	F_TNGF5	F_TNGF6	F_TNGF7	BEDS_AD5	BEDS_AD6	BEDS_AD7
DISP5	.6166**	.6350**	.6577**	.8499**	.8524**	.8680**
DISP6	.6039**	6237**	.6356**	.8429**	.8493**	.8614**
DISP7	.6207**	.6416**	.6678**	.8573**	.8596**	.8761**
ADM_AD5	.6354**	.6555**	.6784**	.8716**	.8750**	.8883**
ADM_AD6	.6561**	.6771**	.6911**	.8937**	.9001**	.9098**
ADM_AD7	.6299**	.6507**	.6741**	.8591**	.8618**	.8777**
R_TOT5	.8716**	.8774**	.8772**	.9788**	.9790**	.9839**
R_TOT6	.8610**	.8702**	.8643**	.9670**	.9710**	.9745**
R_TOT7	.8732**	.8868**	.8900**	.9743**	.9809**	.9848**
R_SHT5	.7009**	.7248**	.7022**	.7702**	.7879**	.7870**
R_SHT6	.6495**	.6731**	.6533**	.7802**	.7921**	.7944**
R_SHT7	.7123**	.7416**	.7186**	.8332**	.8447**	.8404**
R_LONG5	.9149**	.9173**	.9018**	.9782**	.9773**	.9728**
R_LONG6	.9245**	.9305**	.9078**	.9744**	.9787**	.9739**
R_LONG7	.9367**	.9411**	.9251**	.9627**	.9682**	.9634**
R_XFER5	-.3054	-.3046	-.3556	-.1821	-.1590	-.1585
R_XFER6	-.2567	-.2476	-.2983	-.0966	-.0666	-.0690
R_XFER7	-.1441	-.1315	-.1709	-.0216	.0100	.0079
AMBV_IP5	.9298**	.9231**	.9088**	.9101**	.9005**	.9013**
AMBV_IP6	.9046**	.9062**	.8991**	.8641**	.8596**	.8633**
AMBV_IP7	.9015**	.9100**	.9295**	.8740**	.8700**	.8785**
AMBV_OP5	.5100*	.5346*	.5519*	.7331**	.7421**	.7538**
AMBV_OP6	.4952*	.5188*	.5315*	.7326**	.7408**	.7529**
AMBV_OP7	.5188*	.5450*	.5639*	.7491**	.7587**	.7728**
F_TNGI5	.6557**	.6439**	.6917**	.7723**	.7414**	.7625**
F_TNGI6	.6735**	.6675**	.7154**	.7943**	.7722**	.7934**
F_TNGI7	.6891**	.6731**	.7166**	.7926**	.7693**	.7917**
F_TNGR5	.8162**	.8164**	.8043**	.8817**	.8770**	.8838**
F_TNGR6	.8531**	.8549**	.8479**	.9238**	.9206**	.9274**
F_TNGR7	.8578**	.8617**	.8399**	.9187**	.9208**	.9203**
F_TNGF5	1.0000	.9969**	.9713**	.8615**	.8648**	.8590**
F_TNGF6	.9969**	1.0000	.9797**	.8691**	.8751**	.8691**
F_TNGF7	.9713**	.9797**	1.0000	.8652**	.8690**	.8718**
BEDS_AD5	.8615**	.8691**	.8652**	1.0000	.9974**	.9964**
BEDS_AD6	.8648**	.8751**	.8690**	.9974**	1.0000	.9979**
BEDS_AD7	.8590**	.8691**	.8718**	.9964**	.9979**	1.0000
V_AD5	.6785**	.6953**	.7029**	.8450**	.8488**	.8577**
V_AD6	.6668**	.6852**	.6916**	.8332**	.8378**	.8478**
V_AD7	.6833**	.7055**	.7256**	.8456**	.8514**	.8647**
ADM_AN5	.6354**	.6555**	.6784**	.8716**	.8750**	.8883**
ADM_AN6	.6561**	.6771**	.6911**	.8937**	.9001**	.9098**
ADM_AN7	.6299**	.6507**	.6741**	.8591**	.8618**	.8777**
F_TNG5	.8048**	.8023**	.8037**	.8838**	.8730**	.8832**
F_TNG6	.8318**	.8318**	.8374**	.9160**	.9084**	.9186**
F_TNG7	.8544**	.8540**	.8461**	.9275**	.9240**	.9287**
BEDS_AN5	.8614**	.8690**	.8651**	1.0000**	.9974**	.9963**
BEDS_AN6	.8649**	.8752**	.8691**	.9974**	1.0000**	.9979**
BEDS_AN7	.8590**	.8691**	.8718**	.9964**	.9979**	1.0000**
V_AN5	.6784**	.6952**	.7029**	.8450**	.8488**	.8577**
V_AN6	.6668**	.6852**	.6916**	.8332**	.8378**	.8478**
V_AN7	.6833**	.7055**	.7257**	.8456**	.8514**	.8647**

Correlations:	V_AD5	V_AD6	V_AD7	ADM_AN5	ADM_AN6	ADM_AN7
DISP5	.9494**	.9459**	.9550**	.9964**	.9859**	.9899**
DISP6	.9591**	.9558**	.9612**	.9912**	.9908**	.9922**
DISP7	.9529**	.9516**	.9625**	.9920**	.9889**	.9997**
ADM_AD5	.9523**	.9461**	.9560**	1.0000**	.9940**	.9919**
ADM_AD6	.9558**	.9501**	.9585**	.9940**	1.0000**	.9890**
ADM_AD7	.9567**	.9558**	.9658**	.9919**	.9890**	1.0000**
R_TOT5	.8965**	.8864**	.8999**	.9085**	.9206**	.9033**
R_TOT6	.9116**	.9033**	.9159**	.9164**	.9309**	.9161**
R_TOT7	.9024**	.8959**	.9119**	.9114**	.9268**	.9069**
R_SHT5	.8326**	.8265**	.8431**	.8255**	.8303**	.8342**
R_SHT6	.8079**	.8081**	.8286**	.8493**	.8491**	.8562**
R_SHT7	.8136**	.8103**	.8297**	.8470**	.8553**	.8515**
R_LONG5	.7471**	.7358**	.7546**	.7670**	.7981**	.7550**
R_LONG6	.7849**	.7765**	.7938**	.7944**	.8242**	.7875**
R_LONG7	.7474**	.7368**	.7584**	.7560**	.7857**	.7408**
R_XFER5	.1297	.1446	.1175	.0985	.1027	.0974
R_XFER6	.1933	.2102	.1820	.2002	.2041	.1902
R_XFER7	.2927	.3027	.2624	.2225	.2388	.2214
AMBV_IP5	.8082**	.8003**	.7984**	.7572**	.7671**	.7640**
AMBV_IP6	.8178**	.8161**	.8201**	.7629**	.7652**	.7768**
AMBV_IP7	.8260**	.8224**	.8423**	.7889**	.7874**	.8017**
AMBV_OP5	.9712**	.9674**	.9598**	.9345**	.9352**	.9394**
AMBV_OP6	.9630**	.9685**	.9563**	.9262**	.9309**	.9348**
AMBV_OP7	.9626**	.9686**	.9712**	.9357**	.9397**	.9433**
F_TNGI5	.7124**	.6984**	.7116**	.7264**	.7096**	.7507**
F_TNGI6	.7622**	.7511**	.7690**	.7799**	.7664**	.8054**
F_TNGI7	.7208**	.7100**	.7216**	.7531**	.7383**	.7678**
F_TNGR5	.8068**	.7981**	.8196**	.8222**	.8205**	.8265**
F_TNGR6	.8604**	.8499**	.8686**	.8634**	.8659**	.8643**
F_TNGR7	.8428**	.8277**	.8479**	.8374**	.8461**	.8301**
F_TNGF5	.6785**	.6668**	.6833**	.6354**	.6561**	.6299**
F_TNGF6	.6953**	.6852**	.7055**	.6555**	.6771**	.6507**
F_TNGF7	.7029**	.6916**	.7256**	.6784**	.6911**	.6741**
BEDS_AD5	.8450**	.8332**	.8456**	.8716**	.8937**	.8591**
BEDS_AD6	.8488**	.8378**	.8514**	.8750**	.9001**	.8618**
BEDS_AD7	.8577**	.8478**	.8647**	.8883**	.9098**	.8777**
V_AD5	1.0000	.9954**	.9883**	.9523**	.9558**	.9567**
V_AD6	.9954**	1.0000	.9916**	.9461**	.9501**	.9558**
V_AD7	.9883**	.9916**	1.0000	.9560**	.9585**	.9658**
ADM_AN5	.9523**	.9461**	.9560**	1.0000	.9940**	.9919**
ADM_AN6	.9558**	.9501**	.9585**	.9940**	1.0000	.9890**
ADM_AN7	.9567**	.9558**	.9658**	.9919**	.9890**	1.0000
F_TNG5	.8100**	.7998**	.8200**	.8256**	.8204**	.8346**
F_TNG6	.8581**	.8474**	.8663**	.8647**	.8636**	.8713**
F_TNG7	.8495**	.8348**	.8515**	.8528**	.8565**	.8502**
BEDS_AN5	.8450**	.8332**	.8456**	.8716**	.8937**	.8591**
BEDS_AN6	.8488**	.8377**	.8513**	.8750**	.9000**	.8618**
BEDS_AN7	.8577**	.8478**	.8646**	.8882**	.9097**	.8776**
V_AN5	1.0000**	.9954**	.9883**	.9523**	.9558**	.9567**
V_AN6	.9954**	1.0000**	.9916**	.9461**	.9501**	.9558**
V_AN7	.9883**	.9916**	1.0000**	.9560**	.9585**	.9658**

Correlations:	F_TNG5	F_TNG6	F_TNG7	BEDS_AN5	BEDS_AN6	BEDS_AN7
DISP5	.8311**	.8666**	.8511**	.8499**	.8524**	.8679**
DISP6	.8194**	.8552**	.8420**	.8429**	.8493**	.8614**
DISP7	.8290**	.8665**	.8445**	.8573**	.8595**	.8760**
ADM_AD5	.8256**	.8647**	.8528**	.8716**	.8750**	.8882**
ADM_AD6	.8204**	.8636**	.8565**	.8937**	.9000**	.9097**
ADM_AD7	.8346**	.8713**	.8502**	.8591**	.8618**	.8776**
R_TOT5	.9371**	.9649**	.9699**	.9788**	.9791**	.9838**
R_TOT6	.9360**	.9623**	.9674**	.9670**	.9710**	.9745**
R_TOT7	.9064**	.9415**	.9491**	.9743**	.9809**	.9848**
R_SHT5	.8367**	.8510**	.8627**	.7703**	.7880**	.7870**
R_SHT6	.8700**	.8618**	.8640**	.7802**	.7921**	.7944**
R_SHT7	.8496**	.8568**	.8666**	.8333**	.8447**	.8404**
R_LONG5	.8560**	.8815**	.9022**	.9782**	.9774**	.9728**
R_LONG6	.8848**	.9062**	.9273**	.9744**	.9787**	.9739**
R_LONG7	.8527**	.8804**	.9078**	.9626**	.9683**	.9634**
R_XFER5	-.2095	-.1700	-.1624	-.1820	-.1590	-.1586
R_XFER6	-.1542	-.1173	-.1000	-.0965	-.0667	-.0690
R_XFER7	-.1568	-.0848	-.0625	-.0216	.0099	.0079
AMBV_IP5	.9190**	.9329**	.9327**	.9101**	.9006**	.9013**
AMBV_IP6	.9[illegible]**	.9304**	.9251**	.8640**	.8597**	.8633**
AMBV_IP7	.9244**	.9364**	.9246**	.8740**	.8700**	.8785**
AMBV_OP5	.6841**	.7405**	.7281**	.7331**	.7420**	.7537**
AMBV_OP6	.6611**	.7211**	.7058**	.7326**	.7407**	.7528**
AMBV_OP7	.6930**	.7497**	.7349**	.7491**	.7585**	.7728**
F_TNGI5	.8958**	.8899**	.8442**	.7723**	.7415**	.7624**
F_TNGI6	.9177**	.9205**	.8777**	.7943**	.7723**	.7933**
F_TNGI7	.8912**	.8978**	.8582**	.7926**	.7694**	.7916**
F_TNGR5	.9918**	.9814**	.9824**	.8817**	.8771**	.8838**
F_TNGR6	.9825**	.9936**	.9965**	.9239**	.9207**	.9273**
F_TNGR7	.9569**	.9695**	.9898**	.9187**	.9208**	.9203**
F_TNGF5	.8048**	.8318**	.8544**	.8614**	.8669**	.8590**
F_TNGF6	.8023**	.8318**	.8540**	.8690**	.8752**	.8691**
F_TNGF7	.8037**	.8374**	.8461**	.8651**	.8691**	.8718**
BEDS_AD5	.8838**	.9160**	.9275**	1.0000**	.9974**	.9964**
BEDS_AD6	.8730**	.9084**	.9240**	.9974**	1.0000**	.9979**
BEDS_AD7	.8832**	.9186**	.9287**	.9963**	.9979**	1.0000**
V_AD5	.8100**	.8581**	.8495**	.8450**	.8488**	.8577**
V_AD6	.7998**	.8474**	.8348**	.8332**	.8377**	.8478**
V_AD7	.8200**	.8663**	.8515**	.8456**	.8513**	.8646**
ADM_AN5	.8256**	.8647**	.8528**	.8716**	.8750**	.8882**
ADM_AN6	.8204**	.8636**	.8565**	.8937**	.9000**	.9097**
ADM_AN7	.8346**	.8713**	.8502**	.8591**	.8618**	.8776**
F_TNG5	1.0000	.9904**	.9807**	.8838**	.8730**	.8832**
F_TNG6	.9904**	1.0000	.9925**	.9160**	.9085**	.9186**
F_TNG7	.9807**	.9925**	1.0000	.9275**	.9241**	.9287**
BEDS_AN5	.8838**	.9160**	.9275**	1.0000	.9974**	.9963**
BEDS_AN6	.8730**	.9085**	.9241**	.9974**	1.0000	.9979**
BEDS_AN7	.8832**	.9186**	.9287**	.9963**	.9979**	1.0000
V_AN5	.8100**	.8581**	.8495**	.8450**	.8487**	.8577**
V_AN6	.7998**	.8474**	.8348**	.8332**	.8377**	.8478**
V_AN7	.8200**	.8663**	.8515**	.8456**	.8513**	.8646**

Correlations:	V_AN5	V_AN6	V_AN7
DISP5	.9494**	.9459**	.9550**
DISP6	.9592**	.9558**	.9612**
DISP7	.9529**	.9516**	.9625**
ADM_AD5	.9523**	.9461**	.9560**
ADM_AD6	.9558**	.9501**	.9585**
ADM_AD7	.9567**	.9558**	.9658**
R_TOT5	.8965**	.8864**	.8999**
R_TOT6	.9116**	.9033**	.9159**
R_TOT7	.9024**	.8959**	.9119**
R_SHT5	.8326**	.8265**	.8431**
R_SHT6	.8079**	.8081**	.8286**
R_SHT7	.8136**	.8103**	.8297**
R_LONG5	.7471**	.7358**	.7546**
R_LONG6	.7848**	.7765**	.7938**
R_LONG7	.7474**	.7368**	.7584**
R_XFER5	.1297	.1447	.1175
R_XFER6	.1934	.2102	.1820
R_XFER7	.2928	.3027	.2624
AMBV_IP5	.8082**	.8003**	.7984**
AMBV_IP6	.8178**	.8161**	.8201**
AMBV_IP7	.8260**	.8224**	.8423**
AMBV_OP5	.9712**	.9674**	.9598**
AMBV_OP6	.9630**	.9685**	.9563**
AMBV_OP7	.9626**	.9686**	.9712**
F_TNGI5	.7124**	.6984**	.7116**
F_TNGI6	.7622**	.7511**	.7690**
F_TNGI7	.7208**	.7100**	.7215**
F_TNGR5	.8068**	.7981**	.8196**
F_TNGR6	.8604**	.8499**	.8686**
F_TNGR7	.8428**	.8277**	.8449**
F_TNGF5	.6784**	.6668**	.6833**
F_TNGF6	.6952**	.6852**	.7055**
F_TNGF7	.7029**	.6916**	.7257**
BEDS_AD5	.8450**	.8332**	.8456**
BEDS_AD6	.8488**	.8378**	.8514**
BEDS_AD7	.8577**	.8478**	.8647**
V_AD5	1.0000**	.9954**	.9883**
V_AD6	.9954**	1.0000**	.9916**
V_AD7	.9883**	.9916**	1.0000**
ADM_AN5	.9523**	.9461**	.9560**
ADM_AN6	.9558**	.9501**	.9585**
ADM_AN7	.9567**	.9558**	.9658**
F_TNG5	.8100**	.7998**	.8200**
F_TNG6	.8581**	.8474**	.8663**
F_TNG7	.8495**	.8348**	.8515**
BEDS_AN5	.8450**	.8332**	.8456**
BEDS_AN6	.8487**	.8377**	.8513**
BEDS_AN7	.8577**	.8478**	.8646**
V_AN5	1.0000	.9954**	.9883**
V_AN6	.9954**	1.0000	.9916**
V_AN7	.9883**	.9916**	1.0000

APPENDIX H

PRODUCTIVITY ANALYSIS SUPPORT SYSTEM (PASS)

TEST GROUPS OF AMEDD DATA

FISCAL YEARS 1985-1987

PRODUCTIVITY ANALYSIS SUPPORT SYSTEM (PASS)

TEST GROUPS from AMEDD DATA

FY 85-87

TEST RUN	INPUT VARIABLES	OUTPUT VARIABLES	DATA YEARS	TYPE HOSPITAL	NUMBER OF DMUs IN TEST RUN	NUMBER OF EFFICIENT DMUs	INEFFICIENT ENVELOPED DMUs	INEFFICIENT NON-ENVELOPED DMUs	NUMBER OF INCOMPLETE FRONTIERS
1	COST_AVST COST_OPER FTE_AVE	FTE_TNG RWPS_TOT VISIT_AN	FY85 FY86 FY87	1	24	4	10	10	2
2	COST_OPER FTE_AVE	ADM_AN BEDS_AN RWPS_TOT VISIT_AD	FY85 FY86 FY87	1,2,3	75	3	18	54	1
3	COST_AVST FTE_AVE	AMBV_OP BEDS_AD FTE_TNG	FY86	1,2,3	25	3	16	6	1
4	COST_AVST COST_OPER COST_PERS	BEDS_AN RWPS_TOT VISIT_AN	FY85	1,2,3	25	3	16	6	6

TEST RUN	INPUT VARIABLES	OUTPUT VARIABLES	DATA YEARS	TYPE HOSPITAL	NUMBER OF DMUs IN TEST RUN	NUMBER OF EFFICIENT DMUs	INEFFICIENT ENVELOPED DMUs	INEFFICIENT NON-ENVELOPED DMUs	NUMBER OF INCOMPLETE FRONTIERS
5	COST_OPER COST_OPER FTE_AVE	AMBV_IP AMBV_OP BEDS_AN DISP FTE_TNG RWPS_SHT RWPS_TOT VISIT_AN	FY85 FY86 FY87	1,2,3	75	19	33	23	21
6	COST_AVST COST_OPER COST_PERS FTE_AVE	ADM_AN AMBV_IP AMBV_OP BEDS_AN FTE_TNG RWPS_TOT	FY87	1,2,3	25	17	7	1	7
7	COST_AVST COST_OPER COST_PERS FTE_AVE	ADM_AN AMBV_IP AMBV_OP BEDS_AN FTE_TNG RWPS_TOT	FY85 FY86 FY87	1	24	10	12	3	5
8	COST_OPER COST_VST FTE_AVE	ADM_AN BEDS_AD FTE_TNG RWPS_TOT VISIT_AN	FY85 FY86 FY87	1,2	51	20	24	7	23

TEST RUN	INPUT VARIABLES	OUTPUT VARIABLES	DATA YEARS	TYPE HOSPITAL	NUMBER OF DMUs IN TEST RUN	NUMBER OF EFFICIENT DMUs	INEFFICIENT ENVELOPED DMUs	INEFFICIENT NON-ENVELOPED DMUs	NUMBER OF INCOMPLETE FRONTIERS
9	COST_AVST COST_OPER FTE_AVE	ADM_AN AMBV_IP AMBV_OP BEDS_AN FTE_TNG RWPS_TOT	FY85 FY86 FY87	1	24	9	10	5	7
10	COST_AVST COST_OPER FTE_AVE	ADM_AN AMBV_IP AMBV_OP BEDS_AN RWPS_TOT	FY85 FY86 FY87	2,3	51	17	23	11	18
11	COST_OPER COST_PERS COST_VST	AMBV_IP AMBV_OP BEDS_AD RWPS_TOT	FY85 FY86 FY87	1,2,3	75	18	49	8	18
12	COST_OPER COST_PERS COST_VST	AMBV_IP AMBV_OP BEDS_AD RWPS_TOT	FY85	1,2,3	25	10	11	4	10

TEST RUN	INPUT VARIABLES	OUTPUT VARIABLES	DATA YEARS	TYPE HOSPITAL	NUMBER OF DMUs IN TEST RUN	NUMBER OF EFFICIENT DMUs	INEFFICIENT ENVELOPED DMUs	INEFFICIENT NON-ENVELOPED DMUs	NUMBER OF INCOMPLETE FRONTIERS
13	COST_OPER COST_PERS COST_VST	AMBV-IP AMBV_OP BEDS_AD RWPS_TOT	FY86	1,2,3	25	11	13	1	8
14	COST_OPER COST_PERS COST_VST	AMBV-IP AMBV_OP BEDS_AD RWPS_TOT	FY87	1,2,3	25	12	12	1	8 (1 COMPLETE)
15	COST_AVST COST_OPER COST_PERS	AMBV_IP AMBV_OP BEDS_AN RWPS_TOT	FY86 FY86 FY87	1,2,3	75	18	47	10	14 (1 COMPLETE)
16	COST_AVST COST_OPER COST_PERS	AMBV_IP AMBV_OP BEDS_AN RWPS_TOT	FY85	1,2,3	25	11	10	4	5

TEST RUN	INPUT VARIABLES	OUTPUT VARIABLES	DATA YEARS	TYPE HOSPITAL	NUMBER OF DMUs IN TEST RUN	NUMBER OF EFFICIENT DMUs	INEFFICIENT ENVELOPED DMUs	INEFFICIENT NON-ENVELOPED DMUs	NUMBER OF INCOMPLETE FRONTIERS
17	COST_AVST COST_OPER COST_PERS	AMBV_IP AMBV_OP BEDS_AN RWPS_TOT	FY86	1,2,3	25	11	12	2	6
18	COST_AVST COST_OPER COST_PERS	AMBV_IP AMBV_OP BEDS_AN RWPS_TOT	FY87	1,2,3	25	11	14	0	0 (8 COMPLETE)

APPENDIX I

EFFICIENCY COMPARISON FOR MULTIPLE EFFICIENCY ANALYSES REPORT

AMEDD DATA FOR FISCAL YEARS 1985, 1986, 1987, AND 1985-1987

07/29/90

AMEDD HOSPITALS

EFFICIENCY COMPARISON FOR MULTIPLE EFFICIENCY ANALYSES

FOR HDATA: HOSP

Analysis # 77
Analysis Set 1 - FY87, O/P 3 4 6 14, I/P 1 2 3

Dates:
10/01/87

Outputs:
AMBV_IP, AMBV_OP, BEDS_AN, RWPS_TOT

Inputs:
COST_AVST, COST_OPER, COST_PERS

Analysis # 79
Analysis # 16 - All Hosps, All FYs, I/P 1,2,3, O/P 3,4,6,14

Dates:
10/01/85, 10/01/86, 10/01/87

Outputs:
AMBV_IP, AMBV_OP, BEDS_AN, RWPS_TOT

Inputs:
COST_AVST, COST_OPER, COST_PERS

Analysis # 80
Analysis Set 17 - FY86, All Types, I/P 1,2,3, O/P 3,4,6,14

Dates:
10/01/86

Outputs:
AMBV_IP, AMBV_OP, BEDS_AN, RWPS_TOT

Inputs:
COST_AVST, COST_OPER, COST_PERS

Analysis # 81
Analysis 18 - FY85, All Types, I/P 1,2,3, O/P 3,4,6,14

Dates:
10/01/85

07/29/90

AMEDD HOSPITALS

EFFICIENCY COMPARISON FOR MULTIPLE EFFICIENCY ANALYSES

FOR HDATA: HOSP

		UPPER					LOWER				
Date/Type	/Hospital	1	2	3	4	Avg	1	2	3	4	Avg
10/01/85 1	1		1.000		1.000	1.000	0.000	1.000	0.000	1.000	0.500
10/01/85 1	2		0.929		1.000	0.965	0.000	0.929	0.000	1.000	0.482
10/01/85 1	3		0.966		0.975	0.971	0.000	0.912	0.000	0.910	0.456
10/01/85 1	4		0.987		1.000	0.994	0.000	0.987	0.000	1.000	0.497
10/01/85 1	5		1.000		1.000	1.000	0.000	1.000	0.000	1.000	0.500
10/01/85 1	6		1.000		1.000	1.000	0.000	1.000	0.000	1.000	0.500
10/01/85 1	7		1.000		1.000	1.000	0.000	1.000	0.000	1.000	0.500
10/01/85 1	8		1.000		1.000	1.000	0.000	1.000	0.000	1.000	0.500
10/01/85 2	9		0.892		0.914	0.903	0.000	0.876	0.000	0.896	0.443
10/01/85 2	10		0.816		0.876	0.846	0.000	0.815	0.000	0.867	0.420
10/01/85 2	11		0.923		0.964	0.944	0.000	0.908	0.000	0.956	0.466
10/01/85 2	12		0.914		0.914	0.914	0.000	0.914	0.000	0.914	0.457
10/01/85 2	13		0.911		0.954	0.932	0.000	0.907	0.000	0.951	0.465
10/01/85 2	14		0.975		1.000	0.988	0.000	0.975	0.000	1.000	0.494
10/01/85 2	15		0.983		1.000	0.992	0.000	0.968	0.000	1.000	0.492
10/01/85 2	16		1.000		1.000	1.000	0.000	1.000	0.000	1.000	0.500
10/01/85 2	17		0.919		0.973	0.946	0.000	0.919	0.000	0.968	0.472
10/01/85 3	18		1.000		1.000	1.000	0.000	1.000	0.000	1.000	0.500
10/01/85 3	19		0.774		0.826	0.800	0.000	0.772	0.000	0.813	0.396
10/01/85 3	20		0.939		0.966	0.953	0.000	0.932	0.000	0.962	0.474
10/01/85 3	21		0.837		0.851	0.844	0.000	0.824	0.000	0.851	0.419
10/01/85 3	22		0.819		0.849	0.834	0.000	0.788	0.000	0.849	0.409
10/01/85 3	23		0.642		0.674	0.658	0.000	0.623	0.000	0.674	0.324
10/01/85 3	24		0.859		0.889	0.874	0.000	0.859	0.000	0.866	0.431
10/01/85 3	25		0.738		0.772	0.755	0.000	0.679	0.000	0.742	0.355
10/01/86 1	1	1.000	1.000			1.000	0.000	1.000	1.000	0.000	0.500
10/01/86 1	2	1.000	1.000			1.000	0.000	1.000	1.000	0.000	0.500
10/01/86 1	3	0.926	0.962			0.944	0.000	0.872	0.962	0.000	0.459
10/01/86 1	4	0.972	1.000			0.986	0.000	0.725	1.000	0.000	0.431
10/01/86 1	5	0.900	0.941			0.920	0.000	0.898	0.777	0.000	0.419
10/01/86 1	6	1.000	1.000			1.000	0.000	1.000	1.000	0.000	0.500
10/01/86 1	7	0.965	1.000			0.983	0.000	0.965	1.000	0.000	0.491
10/01/86 1	8	0.986	1.000			0.993	0.000	0.971	1.000	0.000	0.493
10/01/86 2	9	0.893	0.914			0.904	0.000	0.889	0.892	0.000	0.445
10/01/86 2	10	0.866	0.868			0.867	0.000	0.864	0.859	0.000	0.431
10/01/86 2	11	0.977	1.000			0.989	0.000	0.977	1.000	0.000	0.494
10/01/86 2	12	0.933	0.991			0.962	0.000	0.906	0.935	0.000	0.460
10/01/86 2	13	0.983	1.000			0.992	0.000	0.983	1.000	0.000	0.496
10/01/86 2	14	1.000	1.000			1.000	0.000	1.000	1.000	0.000	0.500
10/01/86 2	15	1.000	1.000			1.000	0.000	1.000	1.000	0.000	0.500
10/01/86 2	16	0.969	0.979			0.974	0.000	0.968	0.937	0.000	0.476

07/29/90

AMEDD HOSPITALS

EFFICIENCY COMPARISON FOR MULTIPLE EFFICIENCY ANALYSES

FOR HDATA: HOSP

		UPPER					LOWER				
Date/Type	/Hospital	1	2	3	4	Avg	1	2	3	4	Avg
10/01/86 2	17		1.000	1.000		1.000	0.000	1.000	1.000	0.000	0.500
10/01/86 3	18		0.880	0.904		0.892	0.000	0.877	0.831	0.000	0.427
10/01/86 3	19		0.783	0.802		0.793	0.000	0.779	0.796	0.000	0.394
10/01/86 3	20		0.799	0.799		0.799	0.000	0.784	0.794	0.000	0.395
10/01/86 3	21		0.987	0.998		0.993	0.000	0.977	0.996	0.000	0.493
10/01/86 3	22		0.893	0.907		0.900	0.000	0.862	0.872	0.000	0.433
10/01/86 3	23		0.778	0.778		0.778	0.000	0.748	0.756	0.000	0.376
10/01/86 3	24		0.768	0.785		0.777	0.000	0.761	0.785	0.000	0.387
10/01/86 3	25		0.685	0.685		0.685	0.000	0.627	0.630	0.000	0.314
10/01/87 1	1	1.000	0.926			0.963	1.000	0.926	0.000	0.000	0.482
10/01/87 1	2	1.000	0.969			0.985	1.000	0.969	0.000	0.000	0.492
10/01/87 1	3	0.929	0.878			0.904	0.911	0.862	0.000	0.000	0.443
10/01/87 1	4	1.000	0.983			0.992	1.000	0.979	0.000	0.000	0.495
10/01/87 1	5	0.977	0.867			0.922	0.921	0.865	0.000	0.000	0.447
10/01/87 1	6	1.000	1.000			1.000	1.000	1.000	0.000	0.000	0.500
10/01/87 1	7	0.980	0.908			0.944	0.957	0.908	0.000	0.000	0.466
10/01/87 1	8	1.000	1.000			1.000	1.000	1.000	0.000	0.000	0.500
10/01/87 2	9	0.974	0.915			0.945	0.947	0.893	0.000	0.000	0.460
10/01/87 2	10	0.868	0.827			0.848	0.858	0.823	0.000	0.000	0.420
10/01/87 2	11	1.000	1.000			1.000	1.000	1.000	0.000	0.000	0.500
10/01/87 2	12	1.000	0.947			0.974	1.000	0.936	0.000	0.000	0.484
10/01/87 2	13	1.000	1.000			1.000	1.000	1.000	0.000	0.000	0.500
10/01/87 2	14	1.000	0.972			0.986	1.000	0.919	0.000	0.000	0.480
10/01/87 2	15	1.000	1.000			1.000	1.000	1.000	0.000	0.000	0.500
10/01/87 2	16	0.998	0.958			0.978	0.937	0.898	0.000	0.000	0.459
10/01/87 2	17	1.000	0.994			0.997	1.000	0.994	0.000	0.000	0.498
10/01/87 3	18	0.888	0.870			0.879	0.678	0.866	0.000	0.000	0.386
10/01/87 3	19	0.855	0.819			0.837	0.817	0.796	0.000	0.000	0.403
10/01/87 3	20	0.975	0.944			0.960	0.861	0.903	0.000	0.000	0.441
10/01/87 3	21	0.969	0.906			0.938	0.868	0.833	0.000	0.000	0.425
10/01/87 3	22	0.908	0.883			0.896	0.807	0.849	0.000	0.000	0.414
10/01/87 3	23	0.925	0.893			0.909	0.828	0.882	0.000	0.000	0.427
10/01/87 3	24	0.754	0.713			0.734	0.730	0.705	0.000	0.000	0.359
10/01/87 3	25	0.717	0.685			0.701	0.599	0.651	0.000	0.000	0.312
MIN		0.717	0.642	0.685	0.674	0.679	0.599	0.623	0.630	0.674	0.632
MAX		1.000	1.000	1.000	1.000	1.000	0.957	0.994	0.996	0.968	0.979
# Enveloped		0	0	0	0		14	16	0	0	
# Efficient		11	18	11	11						
# Inefficient		14	57	14	14						
Total Cases		25	75	25	25						

APPENDIX J

DETAIL EFFICIENCY ANALYSIS REPORT FOR FISCAL YEAR 1987

DETAIL EFFICIENCY ANALYSIS REPORT FOR FISCAL YEAR 1987

Date: 07/24/90

AMEDD Hospitals

Efficiency Report for HDATA: HOSP
Type 1 : MEDCEN
Hospital 1 :
Date: 10/01/87

Efficiency: 100 PERCENT

Multiplier for Adjusting Output Levels = 1.0000

OUTPUTS

	Output Levels	Adjusted Output Levels	Percent Contribution To Efficiency	Shortage
AMBV_IP	1653.580	1653.580	24.638	
AMBV_OP	7435.040	7435.040	39.406	
BEDS_AN	1242.100	1242.100	36.021	
RWPS_TOT	16636.200	16636.200	0.000	
		Total:	100.065 PERCENT	

INPUTS

	Input Levels	Relative Productivity of Inputs	Excess
COST_AVST	16294.000	50.511	
COST_OPER	27725.000	49.905	
COST_PERS	64546.000	0.000	
	Total:	100.000 PERCENT	

Date: 07/24/90

AMEDD Hospitals

Efficiency Report for HDATA: HOSP
Type 1 : MEDCEN
Hospital 1 :
Date: 10/01/87

Efficiency: 100 PERCENT

Multiplier for Adjusting Input Levels = 1.0000

OUTPUTS

	Output Levels	Percent Contribution To Efficiency	Shortage
AMBV_IP	1653.580	24.638	
AMBV_OP	7435.040	59.406	
BEDS_AN	1242.100	36.021	
RWPS_TOT	16636.200	0.000	

Total: 100.065 PERCENT

INPUTS

	Input Levels	Adjusted Input Levels	Relative Productivity of Inputs	Excess
COST_AVST	16294.000	16294.000	50.511	
COST_OPER	27725.000	27725.000	49.905	
COST_PERS	64546.000	64546.000	0.000	

Total: 100.000 PERCENT

Date: 07/24/90

AMEDD Hospitals

Efficiency Report for HDATA: HOSP
Type 1 : MEDCEN
Hospital 2 :
Date: 10/01/87

Efficiency: 100 PERCENT

Multiplier for Adjusting Output Levels = 1.0000

OUTPUTS

	Output Levels	Adjusted Output Levels	Percent Contribution To Efficiency	Shortage
AMBV_IP	3113.790	3113.790	72.551	
AMBV_OP	8197.350	8197.350	0.000	
BEDS_AN	1596.880	1596.880	27.466	
RWPS_TOT	27430.600	27430.600	0.000	

Total: 100.018 PERCENT

INPUTS

	Input Levels	Relative Productivity of Inputs	Excess
COST_AVST	27874.000	0.000	
COST_OPER	41198.000	0.000	
COST_PERS	77956.000	101.343	

Total: 100.000 PERCENT

Date: 07/24/90

AMEDD Hospitals

Efficiency Report for HDATA: HOSP
Type 1 : MEDCEN
Hospital 2 :
Date: 10/01/87

Efficiency: 100 PERCENT

Multiplier for Adjusting Input Levels = 1.0000

OUTPUTS

	Output Levels	Percent Contribution To Efficiency	Shortage
AMBV_IP	3113.790	72.551	
AMBV_OP	8197.350	0.000	
BEDS_AN	1596.880	27.466	
RWPS_TOT	27430.600	0.000	

Total: 100.018 PERCENT

INPUTS

	Input Levels	Adjusted Input Levels	Relative Productivity of Inputs	Excess
COST_AVST	27874.000	27874.000	0.000	
COST_OPER	41198.000	41198.000	0.000	
COST_PERS	77956.000	77956.000	101.343	

Total: 100.000 PERCENT

Date: 07/24/90

AMEDD Hospitals

Efficiency Report for HDATA: HOSP
Type 1 : MEDCEN
Hospital 3 :
Date: 10/01/87

Efficiency: 91.060 to 92.940

Multiplier for Adjusting Output Levels = 1.0760

OUTPUTS

	Output Levels	Adjusted Output Levels	Percent Contribution To Efficiency	Shortage
AMBV_IP	963.640	1036.841	0.000	436.664
AMBV_OP	5976.510	6430.504	3.586	
BEDS_AN	1158.880	1246.912	89.118	
RWPS_TOT	15790.600	16990.101	0.000	618.483

Total: 92.704 PERCENT

INPUTS

	Input Levels	Relative Productivity of Inputs	Excess
COST_AVST	19480.000	0.000	669.742
COST_OPER	32918.000	42.793	
COST_PERS	57614.000	57.614	

Total: 100.000 PERCENT

Date: 07/24/90

AMEDD Hospitals

Efficiency Report for HDATA: HOSP
Type 1 : MEDCEN
Hospital 3 :
Date: 10/01/87

Efficiency: 91.060 to 92.940

Multiplier for Adjusting Input Levels = 0.9294

OUTPUTS

	Output Levels	Percent Contribution To Efficiency	Shortage
AMBV_IP	963.640	0.000	436.664
AMBV_OP	5976.510	3.586	
BEDS_AN	1158.880	89.118	
RWPS_TOT	15790.600	0.000	618.483

Total: 92.704 PERCENT

INPUTS

	Input Levels	Adjusted Input Levels	Relative Productivity of Inputs	Excess
COST_AVST	19480.000	18104.712	0.000	669.742
COST_OPER	32918.000	30593.989	42.793	
COST_PERS	57614.000	53546.452	57.614	

Total: 100.000 PERCENT

Date: 07/24/90

AMEDD Hospitals

Efficiency Report for HDATA: HOSP
Type 1 : MEDCEN
Hospital 4 :
Date: 10/01/87

Efficiency: 100 PERCENT

Multiplier for Adjusting Output Levels = 1.0000

OUTPUTS

	Output Levels	Adjusted Output Levels	Percent Contribution To Efficiency	Shortage
AMBV_IP	1751.690	1751.690	16.816	
AMBV_OP	5227.530	5227.530	6.273	
BEDS_AN	1339.550	1339.550	76.756	
RWPS_TOT	19025.600	19025.600	0.000	
		Total:	99.845 PERCENT	

INPUTS

	Input Levels	Relative Productivity of Inputs	Excess
COST_AVST	19507.000	0.000	
COST_OPER	36570.000	0.000	
COST_PERS	59281.000	100.778	
	Total:	100.000 PERCENT	

Date: 07/24/90

AMEDD Hospitals

Efficiency Report for HDATA: HOSP
Type 1 : MEDCEN
Hospital 4 :
Date: 10/01/87

Efficiency: 100 PERCENT

Multiplier for Adjusting Input Levels = 1.0000

OUTPUTS

	Output Levels	Percent Contribution To Efficiency	Shortage
AMBV_IP	1751.690	16.816	
AMBV_OP	5227.530	3.273	
BEDS_AN	1339.550	76.756	
RWPS_TOT	19025.600	0.000	
	Total:	99.845 PERCENT	

INPUTS

	Input Levels	Adjusted Input Levels	Relative Productivity of Inputs	Excess
COST_AVST	19507.000	19507.000	0.000	
COST_OPER	36570.000	36570.000	0.000	
COST_PERS	59281.000	59281.000	100.778	
		Total:	100.000 PERCENT	

Date: 07/24/90

AMEDD Hospitals

Efficiency Report for HDATA: HOSP
Type 1 : MEDCEN
Hospital 5 :
Date: 10/01/87

Efficiency: 92.100 to 97.720

Multiplier for Adjusting Output Levels = 1.0233

OUTPUTS

	Output Levels	Adjusted Output Levels	Percent Contribution To Efficiency	Shortage
AMBV_IP	1285.010	1314.992	5.012	
AMBV_OP	4252.700	4351.924	0.425	
BEDS_AN	1025.280	1049.202	92.378	
RWPS_TOT	13915.900	14240.585	0.000	403.454

Total: 97.815 PERCENT

INPUTS

	Input Levels	Relative Productivity of Inputs	Excess
COST_AVST	18061.000	0.000	6105.806
COST_OPER	23849.000	40.543	
COST_PERS	53446.000	58.791	

Total: 100.000 PERCENT

Date: 07/24/90

AMEDD Hospitals

Efficiency Report for HDATA: HOSP
Type 1 : MEDCEN
Hospital 5 :
Date: 10/01/87

Efficiency: 92.100 to 97.720

Multiplier for Adjusting Input Levels = 0.9772

OUTPUTS

	Output Levels	Percent Contribution To Efficiency	Shortage
AMBV_IP	1285.010	5.012	
AMBV_OP	4252.700	0.425	
BEDS_AN	1025.280	92.378	
RWPS_TOT	13915.900	0.000	403.454

Total: 97.815 PERCENT

INPUTS

	Input Levels	Adjusted Input Levels	Relative Productivity of Inputs	Excess
COST_AVST	18061.000	17649.209	0.000	6105.806
COST_OPER	23849.000	23305.243	40.543	
COST_PERS	53446.000	52227.431	58.791	

Total: 100.000 PERCENT

Date: 07/24/90

AMEDD Hospitals

Efficiency Report for HDATA: HOSP
Type 1 : MEDCEN
Hospital 6 :
Date: 10/01/87

Efficiency: 100 PERCENT

Multiplier for Adjusting Output Levels = 1.0000

OUTPUTS

	Output Levels	Adjusted Output Levels	Percent Contribution To Efficiency	Shortage
AMBV_IP	2340.280	2340.280	38.615	
AMBV_OP	8541.860	8541.860	61.501	
BEDS_AN	1115.440	1115.440	0.000	
RWPS_TOT	19312.500	19312.500	0.000	
		Total:	100.116 PERCENT	

INPUTS

	Input Levels	Relative Productivity of Inputs	Excess
COST_AVST	18527.000	0.000	
COST_OPER	30819.000	0.000	
COST_PERS	57454.000	97.672	
	Total:	100.000 PERCENT	

Date: 07/24/90

AMEDD Hospitals

Efficiency Report for HDATA: HOSP
Type 1 : MEDCEN
Hospital 6 :
Date: 10/01/87

Efficiency: 100 PERCENT

Multiplier for Adjusting Input Levels = 1.0000

OUTPUTS

	Output Levels	Percent Contribution To Efficiency	Shortage
AMBV_IP	2340.280	38.615	
AMBV_OP	8541.860	61.501	
BEDS_AN	1115.440	0.000	
RWPS_TOT	19312.500	0.000	
	Total:	100.116 PERCENT	

INPUTS

	Input Levels	Adjusted Input Levels	Relative Productivity of Inputs	Excess
COST_AVST	18527.000	18527.000	0.000	
COST_OPER	30819.000	30819.000	0.000	
COST_PERS	57454.000	57454.000	97.672	
		Total:	100.000 PERCENT	

Date: 07/24/90

AMEDD Hospitals

Efficiency Report for HDATA: HOSP
Type 1 : MEDCEN
Hospital 7 :
Date: 10/01/87

Efficiency: 95.740 to 98.020

Multiplier for Adjusting Output Levels = 1.0202

OUTPUTS

	Output Levels	Adjusted Output Levels	Percent Contribution To Efficiency	Shortage
AMBV_IP	1035.700	1056.621	0.000	538.941
AMBV_OP	8114.520	8278.433	2.434	
BEDS_AN	1534.820	1565.823	85.489	
RWPS_TOT	21231.700	21660.579	10.616	
		Total:	98.540 PERCENT	

INPUTS

	Input Levels	Relative Productivity of Inputs	Excess
COST_AVST	18781.000	0.000	1137.229
COST_OPER	33278.000	36.606	
COST_PERS	83802.000	67.042	
	Total:	100.000 PERCENT	

Date: 07/24/90

AMEDD Hospitals

Efficiency Report for HDATA: HOSP
Type 1 : MEDCEN
Hospital 7 :
Date: 10/01/87

Efficiency: 95.740 to 98.020

Multiplier for Adjusting Input Levels = 0.9802

OUTPUTS

	Output Levels	Percent Contribution To Efficiency	Shortage
AMBV_IP	1035.700	0.000	538.941
AMBV_OP	8114.520	2.434	
BEDS_AN	1534.820	85.489	
RWPS_TOT	21231.700	10.616	
	Total:	98.540 PERCENT	

INPUTS

	Input Levels	Adjusted Input Levels	Relative Productivity of Inputs	Excess
COST_AVST	18781.000	18409.136	0.000	1137.229
COST_OPER	33278.000	32619.096	36.606	
COST_PERS	83802.000	82142.720	67.042	
		Total:	100.000 PERCENT	

Date: 07/24/90

AMEDD Hospitals

Efficiency Report for HDATA: HOSP
Type 1 : MEDCEN
Hospital 8 :
Date: 10/01/87

Efficiency: 100 PERCENT

Multiplier for Adjusting Output Levels = 1.0000

OUTPUTS

	Output Levels	Adjusted Output Levels	Percent Contribution To Efficiency	Shortage
AMBV_IP	2569.970	2569.970	30.326	
AMBV_OP	8827.750	8827.750	59.146	
BEDS_AN	2517.770	2517.770	10.575	
RWPS_TOT	33005.800	33005.800	0.000	
		Total:	100.046 PERCENT	

INPUTS

	Input Levels	Relative Productivity of Inputs	Excess
COST_AVST	20713.000	99.422	
COST_OPER	52382.000	0.000	
COST_PERS	133383.000	0.000	
	Total:	100.000 PERCENT	

Date: 07/24/90

AMEDD Hospitals

Efficiency Report for HDATA: HOSP
Type 1 : MEDCEN
Hospital 8 :
Date: 10/01/87

Efficiency: 100 PERCENT

Multiplier for Adjusting Input Levels = 1.0000

OUTPUTS

	Output Levels	Percent Contribution To Efficiency	Shortage
AMBV_IP	2569.970	30.326	
AMBV_OP	8827.750	59.146	
BEDS_AN	2517.770	10.575	
RWPS_TOT	33005.800	0.000	
	Total:	100.046 PERCENT	

INPUTS

	Input Levels	Adjusted Input Levels	Relative Productivity of Inputs	Excess
COST_AVST	20713.000	20713.000	99.422	
COST_OPER	52382.000	52382.000	0.000	
COST_PERS	133383.000	133383.000	0.000	
		Total:	100.000 PERCENT	

Date: 07/24/90

AMEDD Hospitals

Efficiency Report for HDATA: HOSP
Type 2 : MEDDAC
Hospital 9 :
Date: 10/01/87

Efficiency: 94.740 to 97.410

Multiplier for Adjusting Output Levels = 1.0266

OUTPUTS

	Output Levels	Adjusted Output Levels	Percent Contribution To Efficiency	Shortage
AMBV_IP	345.640	354.830	14.863	
AMBV_OP	5135.300	5271.841	65.218	
BEDS_AN	444.200	456.011	0.000	21.664
RWPS_TOT	7014.900	7201.417	16.836	
		Total:	96.917 PERCENT	

INPUTS

	Input Levels	Relative Productivity of Inputs	Excess
COST_AVST	8926.000	23.208	
COST_OPER	11365.000	77.282	
COST_PERS	28717.000	0.000	2443 450
	Total:	100.000 PERCENT	

Date: 07/24/90

AMEDD Hospitals

Efficiency Report for HDATA: HOSP
Type 2 : MEDDAC
Hospital 9 :
Date: 10/01/87

Efficiency: 94.740 to 97.410

Multiplier for Adjusting Input Levels = 0.9741

OUTPUTS

	Output Levels	Percent Contribution To Efficiency	Shortage
AMBV_IP	345.640	14.863	
AMBV_OP	5135.300	65.218	
BEDS_AN	444.200	0.000	21.664
RWPS_TOT	7014.900	16.836	
	Total:	96.917 PERCENT	

INPUTS

	Input Levels	Adjusted Input Levels	Relative Productivity of Inputs	Excess
COST_AVST	8926.000	8694.817	23.208	
COST_OPER	11365.000	11070.646	77.282	
COST_PERS	28717.000	27973.230	0.000	2443.450
		Total:	100.000 PERCENT	

Date: 07/24/90

AMEDD Hospitals

Efficiency Report for HDATA: HOSP
Type 2 : MEDDAC
Hospital 10 : MEDDAC
Date: 10/01/87

Efficiency: 85.780 to 86.770

Multiplier for Adjusting Output Levels = 1.1525

OUTPUTS

	Output Levels	Adjusted Output Levels	Percent Contribution To Efficiency	Shortage
AMBV_IP	389.460	448.842	11.139	
AMBV_OP	6988.370	8053.901	59.401	
BEDS_AN	623.780	718.889	0.000	19.644
RWPS_TOT	10170.100	11720.756	16.272	
		Total:	86.812 PERCENT	

INPUTS

	Input Levels	Relative Productivity of Inputs	Excess
COST_AVST	13413.000	22.802	
COST_OPER	17112.000	77.004	
COST_PERS	42554.000	0.000	823.622
	Total:	100.000 PERCENT	

Date: 07/24/90

AMEDD Hospitals

Efficiency Report for HDATA: HOSP
Type 2 : MEDDAC
Hospital 10 : MEDDAC
Date: 10/01/87

Efficiency: 85.780 to 86.770

Multiplier for Adjusting Input Levels = 0.8677

OUTPUTS

	Output Levels	Percent Contribution To Efficiency	Shortage
AMBV_IP	389.460	11.139	
AMBV_OP	6988.370	59.401	
BEDS_AN	623.780	0.000	19.644
RWPS_TOT	10170.100	16.272	
	Total:	86.812 PERCENT	

INPUTS

	Input Levels	Adjusted Input Levels	Relative Productivity of Inputs	Excess
COST_AVST	13413.000	11638.460	22.802	
COST_OPER	17112.000	14848.082	77.004	
COST_PERS	42554.000	36924.106	0.000	823.622
		Total:	100.000 PERCENT	

Date: 07/24/90

AMEDD Hospitals

Efficiency Report for HDATA: HOSP
Type 2 : MEDDAC
Hospital 11 : MEDDAC
Date: 10/01/87

Efficiency: 100 PERCENT

Multiplier for Adjusting Output Levels = 1.0000

OUTPUTS

	Output Levels	Adjusted Output Levels	Percent Contribution To Efficiency	Shortage
AMBV_IP	219.700	219.700	5.514	
AMBV_OP	4614.320	4614.320	56.295	
BEDS_AN	498.950	498.950	38.369	
RWPS_TOT	7884.600	7884.600	0.000	
		Total:	100.178 PERCENT	

INPUTS

	Input Levels	Relative Productivity of Inputs	Excess
COST_AVST	7892.000	59.979	
COST_OPER	10048.000	40.192	
COST_PERS	28975.000	0.000	
	Total:	100.000 PERCENT	

Date: 07/24/90

AMEDD Hospitals

Efficiency Report for HDATA: HOSP
Type 2 : MEDDAC
Hospital 11 : MEDDAC
Date: 10/01/87

Efficiency: 100 PERCENT

Multiplier for Adjusting Input Levels = 1.0000

OUTPUTS

	Output Levels	Percent Contribution To Efficiency	Shortage
AMBV_IP	219.700	5.514	
AMBV_OP	4614.320	56.295	
BEDS_AN	498.950	38.369	
RWPS_TOT	7884.600	0.000	
	Total:	100.178 PERCENT	

INPUTS

	Input Levels	Adjusted Input Levels	Relative Productivity of Inputs	Excess
COST_AVST	7892.000	7892.000	59.979	
COST_OPER	10048.000	10048.000	40.192	
COST_PERS	28975.000	28975.000	0.000	
	Total:		100.000 PERCENT	

Date: 07/24/90

AMEDD Hospitals

Efficiency Report for HDATA: HOSP
Type 2 : MEDDAC
Hospital 12 : MEDDAC
Date: 10/01/87

Efficiency: 100 PERCENT

Multiplier for Adjusting Output Levels = 1.0000

OUTPUTS

	Output Levels	Adjusted Output Levels	Percent Contribution To Efficiency	Shortage
AMBV_IP	368.030	368.030	0.000	
AMBV_OP	6790.480	6790.480	97.783	
BEDS_AN	619.040	619.040	2.538	
RWPS_TOT	9462.200	9462.200	0.000	
		Total:	100.321 PERCENT	

INPUTS

	Input Levels	Relative Productivity of Inputs	Excess
COST_AVST	13427.000	13.427	
COST_OPER	13410.000	85.824	
COST_PERS	38401.000	0.000	
	Total:	100.000 PERCENT	

Date: 07/24/90

AMEDD Hospitals

Efficiency Report for HDATA: HOSP
Type 2 : MEDDAC
Hospital 12 : MEDDAC
Date: 10/01/87

Efficiency: 100 PERCENT

Multiplier for Adjusting Input Levels = 1.0000

OUTPUTS

	Output Levels	Percent Contribution To Efficiency	Shortage
AMBV_IP	368.030	0.000	
AMBV_OP	6790.480	97.783	
BEDS_AN	619.040	2.538	
RWPS_TOT	9462.200	0.000	

Total: 100.321 PERCENT

INPUTS

	Input Levels	Adjusted Input Levels	Relative Productivity of Inputs	Excess
COST_AVST	13427.000	13427.000	13.427	
COST_OPER	13410.000	13410.000	85.824	
COST_PERS	38401.000	38401.000	0.000	

Total: 100.000 PERCENT

Date: 07/24/90

AMEDD Hospitals

Efficiency Report for HDATA: HOSP
Type 2 : MEDDAC
Hospital 13 :
Date: 10/01/87

Efficiency: 100 PERCENT

Multiplier for Adjusting Output Levels = 1.0000

OUTPUTS

	Output Levels	Adjusted Output Levels	Percent Contribution To Efficiency	Shortage
AMBV_IP	165.560	165.560	0.000	
AMBV_OP	4295.140	4295.140	100.077	
BEDS_AN	421.940	421.940	0.000	
RWPS_TOT	7326.200	7326.200	0.000	
		Total:	100.077 PERCENT	

INPUTS

	Input Levels	Relative Productivity of Inputs	Excess
COST_AVST	6733.000	100.322	
COST_OPER	9461.000	0.000	
COST_PERS	25340.000	0.000	
	Total:	100.000 PERCENT	

Date: 07/24/90

AMEDD Hospitals

Efficiency Report for HDATA: HOSP
Type 2 : MEDDAC
Hospital 13 :
Date: 10/01/87

Efficiency: 100 PERCENT

Multiplier for Adjusting Input Levels = 1.0000

OUTPUTS

	Output Levels	Percent Contribution To Efficiency	Shortage
AMBV_IP	165.560	0.000	
AMBV_OP	4295.140	100.077	
BEDS_AN	421.940	0.000	
RWPS_TOT	7326.200	0.000	

Total: 100.077 PERCENT

INPUTS

	Input Levels	Adjusted Input Levels	Relative Productivity of Inputs	Excess
COST_AVST	6733.000	6733.000	100.322	
COST_OPER	9461.000	9461.000	0.000	
COST_PERS	25340.000	25340.000	0.000	

Total: 100.000 PERCENT

Date: 07/24/90

AMEDD Hospitals

Efficiency Report for HDATA: HOSP
Type 2 : MEDDAC
Hospital 14 :
Date: 10/01/87

Efficiency: 100 PERCENT

Multiplier for Adjusting Output Levels = 1.0000

OUTPUTS

	Output Levels	Adjusted Output Levels	Percent Contribution To Efficiency	Shortage
AMBV_IP	313.650	313.650	16.278	
AMBV_OP	4979.430	4979.430	83.654	
BEDS_AN	386.900	386.900	0.000	
RWPS_TOT	6912.900	6912.900	0.000	
		Total:	99.933 PERCENT	

INPUTS

	Input Levels	Relative Productivity of Inputs	Excess
COST_AVST	11315.000	0.000	
COST_OPER	9556.000	40.135	
COST_PERS	25325.000	60.780	
	Total:	100.000 PERCENT	

Date: 07/24/90

AMEDD Hospitals

Efficiency Report for HDATA: HOSP
Type 2 : MEDDAC
Hospital 14 :
Date: 10/01/87

Efficiency: 100 PERCENT

Multiplier for Adjusting Input Levels = 1.0000

OUTPUTS

	Output Levels	Percent Contribution To Efficiency	Shortage
AMBV_IP	313.650	16.278	
AMBV_OP	4979.430	83.654	
BEDS_AN	386.900	0.000	
RWPS_TOT	6912.900	0.000	
	Total:	99.933 PERCENT	

INPUTS

	Input Levels	Adjusted Input Levels	Relative Productivity of Inputs	Excess
COST_AVST	11315.000	11315.000	0.000	
COST_OPER	9556.000	9556.000	40.135	
COST_PERS	25325.000	25325.000	60.780	
		Total:	100.000 PERCENT	

Date: 07/24/90

AMEDD Hospitals

Efficiency Report for HDATA: HOSP
Type 2 : MEDDAC
Hospital 15 :
Date: 10/01/87

Efficiency: 100 PERCENT

Multiplier for Adjusting Output Levels = 1.0000

OUTPUTS

	Output Levels	Adjusted Output Levels	Percent Contribution To Efficiency	Shortage
AMBV_IP	206.790	206.790	0.476	
AMBV_OP	4108.710	4108.710	47.250	
BEDS_AN	352.220	352.220	0.000	
RWPS_TOT	5053.500	5053.500	52.051	
		Total:	99.777 PERCENT	

INPUTS

	Input Levels	Relative Productivity of Inputs	Excess
COST_AVST	6623.000	0.000	
COST_OPER	8340.000	0.000	
COST_PERS	18950.000	100.435	
	Total:	100.000 PERCENT	

Date: 07/24/90

AMEDD Hospitals

Efficiency Report for HDAT$_A$: HOSP
Type 2 : MEDDAC
Hospital 15 :
Date: 10/01/87

Efficiency: 100 PERCENT

Multiplier for Adjusting Input Levels = 1.0000

OUTPUTS

	Output Levels	Percent Contribution To Efficiency	Shortage
AMBV_IP	206.790	0.476	
AMBV_OP	4108.710	47.250	
BEDS_AN	352.220	0.000	
RWPS_TOT	5053.500	52.051	
	Total:	99.777 PERCENT	

INPUTS

	Input Levels	Adjusted Input Levels	Relative Productivity of Inputs	Excess
COST_AVST	6623.000	6623.000	0.000	
COST_OPER	8340.000	8340.000	0.000	
COST_PERS	18950.000	18950.000	100.435	
		Total:	100.000 PERCENT	

Date: 07/24/90

AMEDD Hospitals

Efficiency Report for HDATA: HOSP
Type 2 : MEDDAC
Hospital 16 :
Date: 10/01/87

Efficiency: 93.680 to 99.750

Multiplier for Adjusting Output Levels = 1.0025

OUTPUTS

	Output Levels	Adjusted Output Levels	Percent Contribution To Efficiency	Shortage
AMBV_IP	208.900	209.424	0.000	208.845
AMBV_OP	8310.350	8331.178	80.610	
BEDS_AN	714.300	716.090	0.000	53.204
RWPS_TOT	12302.400	12333.233	18.454	

Total: 99.064 PERCENT

INPUTS

	Input Levels	Relative Productivity of Inputs	Excess
COST_AVST	14043.000	19.660	
COST_OPER	17425.000	80.155	
COST_PERS	44087.000	0.000	40.481

Total: 100.000 PERCENT

Date: 07/24/90

AMEDD Hospitals

Efficiency Report for HDATA: HOSP
Type 2 : MEDDAC
Hospital 16 :
Date: 10/01/87

Efficiency: 93.680 to 99.750

Multiplier for Adjusting Input Levels = 0.9975

OUTPUTS

	Output Levels	Percent Contribution To Efficiency	Shortage
AMBV_IP	208.900	0.000	208.845
AMBV_OP	8310.350	80.610	
BEDS_AN	714.300	0.000	53.204
RWPS_TOT	12302.400	18.454	
	Total:	99.064 PERCENT	

INPUTS

	Input Levels	Adjusted Input Levels	Relative Productivity of Inputs	Excess
COST_AVST	14043.000	14007.892	19.660	
COST_OPER	17425.000	17381.438	80.155	
COST_PERS	44087.000	43976.783	0.000	40.481
	Total:		100.000 PERCENT	

Date: 07/24/90

AMEDD Hospitals

Efficiency Report for HDATA: HOSP
Type 2 : MEDDAC
Hospital 17 :
Date: 10/01/87

Efficiency: 100 PERCENT

Multiplier for Adjusting Output Levels = 1.0000

OUTPUTS

	Output Levels	Adjusted Output Levels	Percent Contribution To Efficiency	Shortage
AMBV_IP	239.150	239.150	4.950	
AMBV_OP	4894.880	4894.880	94.961	
BEDS_AN	455.520	455.520	0.000	
RWPS_TOT	7450.100	7450.100	0.000	
		Total:	99.911 PERCENT	

INPUTS

	Input Levels	Relative Productivity of Inputs	Excess
COST_AVST	7754.000	100.027	
COST_OPER	10455.000	0.000	
COST_PERS	25371.000	0.000	
	Total:	100.000 PERCENT	

Date: 07/24/90

AMEDD Hospitals

Efficiency Report for HDATA: HOSP
Type 2 : MEDDAC
Hospital 17 :
Date: 10/01/87

Efficiency: 100 PERCENT

Multiplier for Adjusting Input Levels = 1.0000

OUTPUTS

	Output Levels	Percent Contribution To Efficiency	Shortage
AMBV_IP	239.150	4.950	
AMBV_OP	4894.880	94.961	
BEDS_AN	455.520	0.000	
RWPS_TOT	7450.100	0.000	
	Total:	99.911 PERCENT	

INPUTS

	Input Levels	Adjusted Input Levels	Relative Productivity of Inputs	Excess
COST_AVST	7754.000	7754.000	100.027	
COST_OPER	10455.000	10455.000	0.000	
COST_PERS	25371.000	25371.000	0.000	
		Total:	100.000 PERCENT	

Date: 07/24/90

AMEDD Hospitals

Efficiency Report for HDATA: HOSP
Type 3 : MEDDAC
Hospital 18 :
Date: 10/01/87

Efficiency: 67.790 to 88.850

Multiplier for Adjusting Output Levels = 1.1255

OUTPUTS

	Output Levels	Adjusted Output Levels	Percent Contribution To Efficiency	Shortage
AMBV_IP	143.180	161.148	0.000	69.574
AMBV_OP	4227.210	4757.693	88.771	
BEDS_AN	265.360	298.661	0.000	97.018
RWPS_TOT	4886.500	5499.719	0.000	312.749

Total: 88.771 PERCENT

INPUTS

	Input Levels	Relative Productivity of Inputs	Excess
COST_AVST	9064.000	0.000	1239.425
COST_OPER	10727.000	0.000	950.494
COST_PERS	21943.000	100.938	

Total: 100.000 PERCENT

Date: 07/24/90

AMEDD Hospitals

Efficiency Report for HDATA: HOSP
Type 3 : MEDDAC
Hospital 18 :
Date: 10/01/87

Efficiency: 67.790 to 88.850

Multiplier for Adjusting Input Levels = 0.8885

OUTPUTS

	Output Levels	Percent Contribution To Efficiency	Shortage
AMBV_IP	143.180	0.000	69.574
AMBV_OP	4227.210	88.771	
BEDS_AN	265.360	0.000	97.018
RWPS_TOT	4886.500	0.000	312.749

Total: 88.771 PERCENT

INPUTS

	Input Levels	Adjusted Input Levels	Relative Productivity of Inputs	Excess
COST_AVST	9064.000	8053.364	0.000	1239.425
COST_OPER	10727.000	9530.940	0.000	950.494
COST_PERS	21943.000	19496.355	100.938	

Total: 100.000 PERCENT

Date: 07/24/90

AMEDD Hospitals

Efficiency Report for HDATA: HOSP
Type 3 : MEDDAC
Hospital 19 :
Date: 10/01/87

Efficiency: 81.710 to 85.450

Multiplier for Adjusting Output Levels = 1.1703

OUTPUTS

	Output Levels	Adjusted Output Levels	Percent Contribution To Efficiency	Shortage
AMBV_IP	252.770	295.810	10.642	
AMBV_OP	4747.360	5555.717	59.342	
BEDS_AN	374.860	438.689	0.000	50.774
RWPS_TOT	6519.800	7629.959	15.648	
		Total:	85.631 PERCENT	

INPUTS

	Input Levels	Relative Productivity of Inputs	Excess
COST_AVST	9000.000	22.500	
COST_OPER	11650.000	76.890	
COST_PERS	29739.000	0.000	2072.484
	Total:	100.000 PERCENT	

Date: 07/24/90

AMEDD Hospitals

Efficiency Report for HDATA: HOSP
Type 3 : MEDDAC
Hospital 19 :
Date: 10/01/87

Efficiency: 81.710 to 85.450

Multiplier for Adjusting Input Levels = 0.8545

OUTPUTS

	Output Levels	Percent Contribution To Efficiency	Shortage
AMBV_IP	252.770	10.642	
AMBV_OP	4747.360	59.342	
BEDS_AN	374.860	0.000	50.774
RWPS_TOT	6519.800	15.648	
	Total:	85.631 PERCENT	

INPUTS

	Input Levels	Adjusted Input Levels	Relative Productivity of Inputs	Excess
COST_AVST	9000.000	7690.500	22.500	
COST_OPER	11650.000	9954.925	76.890	
COST_PERS	29739.000	25411.976	0.000	2072.484
		Total:	100.000 PERCENT	

Date: 07/24/90

AMEDD Hospitals

Efficiency Report for HDATA: HOSP
Type 3 : MEDDAC
Hospital 20 :
Date: 10/01/87

Efficiency: 86.050 to 97.540

Multiplier for Adjusting Output Levels = 1.0252

OUTPUTS

	Output Levels	Adjusted Output Levels	Percent Contribution To Efficiency	Shortage
AMBV_IP	174.190	178.583	0.000	16.700
AMBV_OP	3961.430	4061.339	97.451	
BEDS_AN	320.100	328.173	0.000	49.885
RWPS_TOT	5295.400	5428.952	0.000	781.260

Total: 97.451 PERCENT

INPUTS

	Input Levels	Relative Productivity of Inputs	Excess
COST_AVST	6429.000	93.221	
COST_OPER	8979.000	0.000	279.980
COST_PERS	21239.000	6.372	

Total: 100.000 PERCENT

Date: 07/24/90

AMEDD Hospitals

Efficiency Report for HDATA: HOSP
Type 3 : MEDDAC
Hospital 20 :
Date: 10/01/87

Efficiency: 86.050 to 97.540

Multiplier for Adjusting Input Levels = 0.9754

OUTPUTS

	Output Levels	Percent Contribution To Efficiency	Shortage
AMBV_IP	174.190	0.000	16.700
AMBV_OP	3961.430	97.451	
BEDS_AN	320.100	0.000	49.885
RWPS_TOT	5295.400	0.000	781.260

Total: 97.451 PERCENT

INPUTS

	Input Levels	Adjusted Input Levels	Relative Productivity of Inputs	Excess
COST_AVST	6429.000	6270.847	93.221	
COST_OPER	8979.000	8758.117	0.000	279.980
COST_PERS	21239.000	20716.521	6.372	

Total: 100.000 PERCENT

Date: 07/24/90

AMEDD Hospitals

Efficiency Report for HDATA: HOSP
Type 3 : MEDDAC
Hospital 21 :
Date: 10/01/87

Efficiency: 86.790 to 96.910

Multiplier for Adjusting Output Levels = 1.0319

OUTPUTS

	Output Levels	Adjusted Output Levels	Percent Contribution To Efficiency	Shortage
AMBV_IP	62.720	64.720	0.000	53.508
AMBV_OP	2281.530	2354.277	79.625	
BEDS_AN	169.720	175.132	0.000	34.096
RWPS_TOT	3101.300	3200.186	17.367	
		Total:	96.993 PERCENT	

INPUTS

	Input Levels	Relative Productivity of Inputs	Excess
COST_AVST	4008.000	20.040	
COST_OPER	4817.000	79.962	
COST_PERS	13518.000	0.000	1554.848
	Total:	100.000 PERCENT	

Date: 07/24/90

AMEDD Hospitals

Efficiency Report for HDATA: HOSP
Type 3 : MEDDAC
Hospital 21 :
Date: 10/01/87

Efficiency: 86.790 to 96.910

Multiplier for Adjusting Input Levels = 0.9691

OUTPUTS

	Output Levels	Percent Contribution To Efficiency	Shortage
AMBV_IP	62.720	0.000	53.508
AMBV_OP	2281.530	79.625	
BEDS_AN	169.720	0.000	34.096
RWPS_TOT	3101.300	17.367	

Total: 96.993 PERCENT

INPUTS

	Input Levels	Adjusted Input Levels	Relative Productivity of Inputs	Excess
COST_AVST	4008.000	3884.153	20.040	
COST_OPER	4817.000	4668.155	79.962	
COST_PERS	13518.000	13100.294	0.000	1554.848

Total: 100.000 PERCENT

Date: 07/24/90

AMEDD Hospitals

Efficiency Report for HDATA: HOSP
Type 3 : MEDDAC
Hospital 22 :
Date: 10/01/87

Efficiency: 80.690 to 90.810

Multiplier for Adjusting Output Levels = 1.1012

OUTPUTS

	Output Levels	Adjusted Output Levels	Percent Contribution To Efficiency	Shortage
AMBV_IP	26.230	28.884	0.000	94.260
AMBV_OP	2260.130	2488.856	35.032	
BEDS_AN	187.240	206.189	0.000	24.767
RWPS_TOT	3473.000	3824.469	55.915	
		Total:	90.947 PERCENT	

INPUTS

	Input Levels	Relative Productivity of Inputs	Excess
COST_AVST	4188.000	0.000	196.731
COST_OPER	5445.000	0.000	51.412
COST_PERS	12976.000	99.915	
	Total:	100.000 PERCENT	

Date: 07/24/90

AMEDD Hospitals

Efficiency Report for HDATA: HOSP
Type 3 : MEDDAC
Hospital 22 :
Date: 10/01/87

Efficiency: 80.690 to 90.810

Multiplier for Adjusting Input Levels = 0.9081

OUTPUTS

	Output Levels	Percent Contribution To Efficiency	Shortage
AMBV_IP	26.230	0.000	94.260
AMBV_OP	2260.130	35.032	
BEDS_AN	187.240	0.000	24.767
RWPS_TOT	3473.000	55.915	
	Total:	90.947 PERCENT	

INPUTS

	Input Levels	Adjusted Input Levels	Relative Productivity of Inputs	Excess
COST_AVST	4188.000	3803.123	0.000	196.731
COST_OPER	5445.000	4944.605	0.000	51.412
COST_PERS	12976.000	11783.506	99.915	
		Total:	100.000 PERCENT	

Date: 07/24/90

AMEDD Hospitals

Efficiency Report for HDATA: HOSP
Type 3 : MEDDAC
Hospital 23 :
Date: 10/01/87

Efficiency: 82.770 to 92.510

Multiplier for Adjusting Output Levels = 1.0810

OUTPUTS

	Output Levels	Adjusted Output Levels	Percent Contribution To Efficiency	Shortage
AMBV_IP	247.950	268.025	10.513	
AMBV_OP	4169.840	4507.448	82.146	
BEDS_AN	356.970	385.872	0.000	33.094
RWPS_TOT	6118.100	6613.447	0.000	163.886

Total: 92.659 PERCENT

INPUTS

	Input Levels	Relative Productivity of Inputs	Excess
COST_AVST	7283.000	77.928	
COST_OPER	9852.000	21.674	
COST_PERS	25035.000	0.000	1653.643

Total: 100.000 PERCENT

Date: 07/24/90

AMEDD Hospitals

Efficiency Report for HDATA: HOSP
Type 3 : MEDDAC
Hospital 23 :
Date: 10/01/87

Efficiency: 82.770 to 92.510

Multiplier for Adjusting Input Levels = 0.9251

OUTPUTS

	Output Levels	Percent Contribution To Efficiency	Shortage
AMBV_IP	247.950	10.513	
AMBV_OP	4169.840	82.146	
BEDS_AN	356.970	0.000	33.094
RWPS_TOT	6118.100	0.000	163.886

Total: 92.659 PERCENT

INPUTS

	Input Levels	Adjusted Input Levels	Relative Productivity of Inputs	Excess
COST_AVST	7283.000	6737.503	77.928	
COST_OPER	9852.000	9114.085	21.674	
COST_PERS	25035.000	23159.879	0.000	1653.643

Total: 100.000 PERCENT

Date: 07/24/90

AMEDD Hospitals

Efficiency Report for HDATA: HOSP
Type 3 : MEDDAC
Hospital 24 :
Date: 10/01/87

Efficiency: 73.010 to 75.420

Multiplier for Adjusting Output Levels = 1.3259

OUTPUTS

	Output Levels	Adjusted Output Levels	Percent Contribution To Efficiency	Shortage
AMBV_IP	161.340	213.922	9.148	
AMBV_OP	2836.780	3761.310	45.388	
BEDS_AN	251.850	333.930	*0.000*	9.524
RWPS_TOT	4328.500	5739.194	20.777	
		Total:	75.313 PERCENT	

INPUTS

	Input Levels	Relative Productivity of Inputs	Excess
COST_AVST	6385.000	21.070	
COST_OPER	8072.000	79.106	
COST_PERS	22212.000	0.000	1925.869
	Total:	100.000 PERCENT	

Date: 07/24/90

AMEDD Hospitals

Efficiency Report for HDATA: HOSP
Type 3 : MEDDAC
Hospital 24 :
Date: 10/01/87

Efficiency: 73.010 to 75.420

Multiplier for Adjusting Input Levels = 0.7542

OUTPUTS

	Output Levels	Percent Contribution To Efficiency	Shortage
AMBV_IP	161.340	9.148	
AMBV_OP	2836.780	45.388	
BEDS_AN	251.850	0.000	9.524
RWPS_TOT	4328.500	20.777	
	Total:	75.313 PERCENT	

INPUTS

	Input Levels	Adjusted Input Levels	Relative Productivity of Inputs	Excess
COST_AVST	6385.000	4815.567	21.070	
COST_OPER	8072.000	6087.902	79.106	
COST_PERS	22212.000	16752.290	0.000	1925.869
		Total:	100.000 PERCENT	

Date: 07/24/90

AMEDD Hospitals

Efficiency Report for HDATA: HOSP
Type 3 : MEDDAC
Hospital 25 :
Date: 10/01/87

Efficiency: 59.940 to 71.690

Multiplier for Adjusting Output Levels = 1.3949

OUTPUTS

	Output Levels	Adjusted Output Levels	Percent Contribution To Efficiency	Shortage
AMBV_IP	127.280	177.542	0.000	33.691
AMBV_OP	3300.900	4604.408	71.630	
BEDS_AN	254.040	354.359	0.000	53.295
RWPS_TOT	4353.700	6072.953	0.000	675.696

Total: 71.630 PERCENT

INPUTS

	Input Levels	Relative Productivity of Inputs	Excess
COST_AVST	7293.000	92.621	
COST_OPER	10898.000	0.000	760.618
COST_PERS	23894.000	7.168	

Total: 100.000 PERCENT

Date: 07/24/90

AMEDD Hospitals

Efficiency Report for HDATA: HOSP
Type 3 : MEDDAC
Hospital 25 :
Date: 10/01/87

Efficiency: 59.940 to 71.690

Multiplier for Adjusting Input Levels = 0.7169

OUTPUTS

	Output Levels	Percent Contribution To Efficiency	Shortage
AMBV_IP	127.280	0.000	33.691
AMBV_OP	3300.900	71.630	
BEDS_AN	254.040	0.000	53.295
RWPS_TOT	4353.700	0.000	675.696

Total: 71.630 PERCENT

INPUTS

	Input Levels	Adjusted Input Levels	Relative Productivity of Inputs	Excess
COST_AVST	7293.000	5228.352	92.621	
COST_OPER	10898.000	7812.776	0.000	760.618
COST_PERS	23894.000	17129.609	7.168	

Total: 100.000 PERCENT

APPENDIX K

SUMMARY OF LOCAL FRONTIERS REPORT FOR FISCAL YEAR 1987

07/29/90

AMEDD Hospitals

SUMMARY OF LOCAL FRONTIERS
FOR HDATA HOSP

Analysis Description:
Analysis Set 1 - FY87, O/P 3 4 6 14, I/P 1 2 3

Dates:
10/01/87

Outputs:
AMBV_IP, AMBV_OP, BEDS_AN, RWPS_TOT

Inputs:
COST_AVST, COST_OPER, COST_PERS

COMPLETE FRONTIERS

1.	10/01/87	2	17
	10/01/87	2	15
	10/01/87	1	4
	10/01/87	1	6
	10/01/87	1	8
	10/01/87	1	1
2.	10/01/87	1	1
	10/01/87	1	2
	10/01/87	1	8
	10/01/87	1	6
	10/01/87	2	17
	10/01/87	1	4
3.	10/01/87	2	17
	10/01/87	2	11
	10/01/87	1	2
	10/01/87	1	1
	10/01/87	1	8
	10/01/87	1	6
4.	10/01/87	2	17
	10/01/87	2	11
	10/01/87	1	6
	10/01/87	2	15
	10/01/87	2	12
	10/01/87	2	14
5.	10/01/87	2	17
	10/01/87	1	2
	10/01/87	2	15
	10/01/87	2	11
	10/01/87	1	1
	10/01/87	1	6

SUMMARY OF LOCAL FRONTIERS

FOR HDATA HOSP

6.	10/01/87	2	13
	10/01/87	2	14
	10/01/87	1	6
	10/01/87	2	17
	10/01/87	1	2
	10/01/87	2	11
7.	10/01/87	2	17
	10/01/87	1	6
	10/01/87	1	4
	10/01/87	2	15
	10/01/87	1	1
	10/01/87	1	2
	10/01/87	1	2
	10/01/87	2	17
	10/01/87	1	6
	10/01/87	2	13
	10/01/87	1	8
	10/01/87	2	11

INCOMPLETE FRONTIERS

APPENDIX L

FRONTIER UNIT COMPARISON REPORT FOR FISCAL YEAR 1987

Date: 07/29/90

AMEDD Hospitals

Measurements of Local Frontier for HDATA: HOSP
Type 1 : MEDCEN
Hospital 3 :
Date: 10/01/87

Frontier Hospitals

Type	2	2	1	1	1
Hospital	17	15	4	6	8
Date	10/01/87	10/01/87	10/01/87	10/01/87	10/01/87
Multiplier	0.627	0.200	0.869	-0.373	-0.064
Outputs					
AMBV_IP	239.150	206.790	1751.690	2340.280	2569.970
AMBV_OP	4894.880	4108.710	5227.530	8541.860	8827.750
BEDS_AN	455.520	352.220	1339.550	1115.440	2517.770
RWPS_TOT	7450.100	5053.500	19025.600	19312.500	33005.800
Inputs					
COST_AVST	7754.000	6623.000	19507.000	18527.000	20713.000
COST_OPER	10455.000	8340.000	36570.000	30819.000	52382.000
COST_PERS	25371.000	18950.000	59281.000	57454.000	133383.000

Date: 07/29/90

AMEDD Hospitals

Measurements of Local Frontier for HDATA: HOSP
Type 1 : MEDCEN
Hospital 3 :
Date: 10/01/87

Frontier Hospitals

Type	1
Hospital	1
Date	10/01/87
Multiplier	0.175

Outputs

AMBV_IP	1653.580
AMBV_OP	7435.040
BEDS_AN	1242.100
RWPS_TOT	16636.200

Inputs

COST_AVST	16294.000
COST_OPER	27725.000
COST_PERS	64546.000

Date: 07/29/90

AMEDD Hospitals

Measurements of Local Frontier for HDATA: HOSP
Type 1 : MEDCEN
Hospital 5 :
Date: 10/01/87

Frontier Hospitals

Type	1	1	1	1	2
Hospital	1	2	8	6	17
Date	10/01/87	10/01/87	10/01/87	10/01/87	10/01/87
Multiplier	1.018	0.707	-0.154	-1.008	0.094
Outputs					
AMBV_IP	1653.580	3113.790	2569.970	2340.280	239.150
AMBV_OP	7435.040	8197.350	8827.750	8541.860	4894.880
BEDS_AN	1242.100	1596.880	2517.770	1115.440	455.520
RWPS_TOT	16636.200	27430.600	33005.800	19312.500	7450.100
Inputs					
COST_AVST	16294.000	27874.000	20713.000	18527.000	7754.000
COST_OPER	27725.000	41198.000	52382.000	30819.000	10455.000
COST_PERS	64546.000	77956.000	133383.000	57454.000	25371.000

Date: 07/29/90

AMEDD Hospitals

Measurements of Local Frontier for HDATA: HOSP
Type 1 : MEDCEN
Hospital 5 :
Date: 10/01/87

Frontier Hospitals

Type	1
Hospital	4
Date	10/01/87
Multiplier	0.076

Outputs

AMBV_IP	1751.690
AMBV_OP	5227.530
BEDS_AN	1339.550
RWPS_TOT	19025.600

Inputs

COST_AVST	19507.000
COST_OPER	36570.000
COST_PERS	59281.000

Date: 07/29/90

AMEDD Hospitals

Measurements of Local Frontier for HDATA: HOSP
Type 1 : MEDCEN
Hospital 7 :
Date: 10/01/87

Frontier Hospitals

Type	2	2	1	1	1
Hospital	17	11	2	1	8
Date	10/01/87	10/01/87	10/01/87	10/01/87	10/01/87
Multiplier	2.164	-0.811	0.420	0.186	0.379
Outputs					
AMBV_IP	239.150	219.700	3113.790	1653.580	2569.970
AMBV_OP	4894.880	4614.320	8197.350	7435.040	8827.750
BEDS_AN	455.520	498.950	1596.880	1242.100	2517.770
RWPS_TOT	7450.100	7884.600	27430.600	16636.200	33005.800
Inputs					
COST_AVST	7754.000	7892.000	27874.000	16294.000	20713.000
COST_OPER	10455.000	10048.000	41198.000	27725.000	52382.000
COST_PERS	25371.000	28975.000	77956.000	64546.000	133383.000

Date: 07/29/90

AMEDD Hospitals

Measurements of Local Frontier for HDATA: HOSP
Type 1 : MEDCEN
Hospital 7 :
Date: 10/01/87

Frontier Hospitals

Type	1
Hospital	6
Date	10/01/87
Multiplier	-0.808

Outputs

AMBV_IP	2340.280
AMBV_OP	8541.860
BEDS_AN	1115.440
RWPS_TOT	19312.500

Inputs

COST_AVST	18527.000
COST_OPER	30819.000
COST_PERS	57454.000

Date: 07/29/90

AMEDD Hospitals

Measurements of Local Frontier for HDATA: HOSP
Type 2 : MEDDAC
Hospital 9 :
Date: 10/01/87

Frontier Hospitals

Type	2	2	1	2	2
Hospital	17	11	6	15	12
Date	10/01/87	10/01/87	10/01/87	10/01/87	10/01/87
Multiplier	3.182	-2.714	0.052	-2.058	2.531
Outputs					
AMBV_IP	239.150	219.700	2340.280	206.790	368.030
AMBV_OP	4894.880	4614.320	8541.860	4108.710	6790.480
BEDS_AN	455.520	498.950	1115.440	352.220	619.040
RWPS_TOT	7450.100	7884.600	19312.500	5053.500	9462.200
Inputs					
COST_AVST	7754.000	7892.000	18527.000	6623.000	13427.000
COST_OPER	10455.000	10048.000	30819.000	8340.000	13410.000
COST_PERS	25371.000	28975.000	57454.000	18950.000	38401.000

Date: 07/29/90

AMEDD Hospitals

Measurements of Local Frontier for HDATA: HOSP
Type 2 : MEDDAC
Hospital 9 :
Date: 10/01/87

Frontier Hospitals

Type	2
Hospital	14
Date	10/01/87
Multiplier	-1.424

Outputs

AMBV_IP	313.650
AMBV_OP	4979.430
BEDS_AN	386.900
RWPS_TOT	6912.900

Inputs

COST_AVST	11315.000
COST_OPER	9556.000
COST_PERS	25325.000

Date: 07/29/90

AMEDD Hospitals

Measurements of Local Frontier for HDATA: HOSP
Type 2 : MEDDAC
Hospital 10 : MEDDAC
Date: 10/01/87

Frontier Hospitals

Type	2	1	2	2	2
Hospital	15	6	11	17	12
Date	10/01/87	10/01/87	10/01/87	10/01/87	10/01/87
Multiplier	-1.222	0.023	-1.532	2.619	1.408
Outputs					
AMBV_IP	206.790	2340.280	219.700	239.150	368.030
AMBV_OP	4108.710	8541.860	4614.320	4894.880	6790.480
BEDS_AN	352.220	1115.440	498.950	455.520	619.040
RWPS_TOT	5053.500	19312.500	7884.600	7450.100	9462.200
Inputs					
COST_AVST	6623.000	18527.000	7892.000	7754.000	13427.000
COST_OPER	8340.000	30819.000	10048.000	10455.000	13410.000
COST_PERS	18950.000	57454.000	28975.000	25371.000	38401.000

Date: 07/29/90

AMEDD Hospitals

Measurements of Local Frontier for HDATA: HOSP
Type 2 : MEDDAC
Hospital 10 : MEDDAC
Date: 10/01/87

Frontier Hospitals

Type	2
Hospital	14
Date	10/01/87
Multiplier	-0.703

Outputs

AMBV_IP	313.650
AMBV_OP	4979.430
BEDS_AN	386.900
RWPS_TOT	6912.900

Inputs

COST_AVST	11315.000
COST_OPER	9556.000
COST_PERS	25325.000

Date: 07/29/90

AMEDD Hospitals

Measurements of Local Frontier for HDATA: HOSP
Type 2 : MEDDAC
Hospital 16 :
Date: 10/01/87

Frontier Hospitals

Type	1	2	2	2	2
Hospital	6	15	14	17	12
Date	10/01/87	10/01/87	10/01/87	10/01/87	10/01/87
Multiplier	-0.110	-0.740	0.220	2.617	0.042
Outputs					
AMBV_IP	2340.280	206.790	313.650	239.150	368.030
AMBV_OP	8541.860	4108.710	4979.430	4894.880	6790.480
BEDS_AN	1115.440	352.220	386.900	455.520	619.040
RWPS_TOT	19312.500	5053.500	6912.900	7450.100	9462.200
Inputs					
COST_AVST	18527.000	6623.000	11315.000	7754.000	13427.000
COST_OPER	30819.000	8340.000	9556.000	10455.000	13410.000
COST_PERS	57454.000	18950.000	25325.000	25371.000	38401.000

Date: 07/29/90

AMEDD Hospitals

Measurements of Local Frontier for HDATA: HOSP
Type 2 : MEDDAC
Hospital 16 :
Date: 10/01/87

Frontier Hospitals

Type	2
Hospital	11
Date	10/01/87
Multiplier	-0.412

Outputs

AMBV_IP	219.700
AMBV_OP	4614.320
BEDS_AN	498.950
RWPS_TOT	7884.600

Inputs

COST_AVST	7892.000
COST_OPER	10048.000
COST_PERS	28975.000

Date: 07/29/90

AMEDD Hospitals

Measurements of Local Frontier for HDATA: HOSP
Type 3 : MEDDAC
Hospital 18 :
Date: 10/01/87

Frontier Hospitals

Type	2	1	2	2	1
Hospital	17	2	15	11	1
Date	10/01/87	10/01/87	10/01/87	10/01/87	10/01/87
Multiplier	0.384	-0.020	0.758	-0.025	-0.253
Outputs					
AMBV_IP	239.150	3113.790	206.790	219.700	1653.580
AMBV_OP	4894.880	8197.350	4108.710	4614.320	7435.040
BEDS_AN	455.520	1596.880	352.220	498.950	1242.100
RWPS_TOT	7450.100	27430.600	5053.500	7884.600	16636.200
Inputs					
COST_AVST	7754.000	27874.000	6623.000	7892.000	16294.000
COST_OPER	10455.000	41198.000	8340.000	10048.000	27725.000
COST_PERS	25371.000	77956.000	18950.000	28975.000	64546.000

Date: 07/29/90

AMEDD Hospitals

Measurements of Local Frontier for HDATA: HOSP
Type 3 : MEDDAC
Hospital 18 :
Date: 10/01/87

Frontier Hospitals

Type	1
Hospital	6
Date	10/01/87
Multiplier	0.162

Outputs

AMBV_IP	2340.280
AMBV_OP	8541.860
BEDS_AN	1115.440
RWPS_TOT	19312.500

Inputs

COST_AVST	18527.000
COST_OPER	30819.000
COST_PERS	57454.000

Date: 07/29/90

AMEDD Hospitals

Measurements of Local Frontier for HDATA: HOSP
Type 3 : MEDDAC
Hospital 19 :
Date: 10/01/87

Frontier Hospitals

Type	2	1	2	2	2
Hospital	15	6	11	17	12
Date	10/01/87	10/01/87	10/01/87	10/01/87	10/01/87
Multiplier	-3.464	0.015	-3.896	4.909	3.188
Outputs					
AMBV_IP	206.790	2340.280	219.700	239.150	368.030
AMBV_OP	4108.710	8541.860	4614.320	4894.880	6790.480
BEDS_AN	352.220	1115.440	498.950	455.520	619.040
RWPS_TOT	5053.500	19312.500	7884.600	7450.100	9462.200
Inputs					
COST_AVST	6623.000	18527.000	7892.000	7754.000	13427.000
COST_OPER	8340.000	30819.000	10048.000	10455.000	13410.000
COST_PERS	18950.000	57454.000	28975.000	25371.000	38401.000

Date: 07/29/90

AMEDD Hospitals

Measurements of Local Frontier for HDATA: HOSP
Type 3 : MEDDAC
Hospital 19 :
Date: 10/01/87

Frontier Hospitals

Type	2
Hospital	14
Date	10/01/87
Multiplier	-1.777

Outputs

AMBV_IP	313.650
AMBV_OP	4979.430
BEDS_AN	386.900
RWPS_TOT	6912.900

Inputs

COST_AVST	11315.000
COST_OPER	9556.000
COST_PERS	25325.000

Date: 07/29/90

AMEDD Hospitals

Measurements of Local Frontier for HDATA: HOSP
Type 3 : MEDDAC
Hospital 20 :
Date: 10/01/87

Frontier Hospitals

Type	2	2	1	2	1
Hospital	13	14	6	17	2
Date	10/01/87	10/01/87	10/01/87	10/01/87	10/01/87
Multiplier	0.012	0.029	0.118	0.827	-0.091
Outputs					
AMBV_IP	165.560	313.650	2340.280	239.150	3113.790
AMBV_OP	4295.140	4979.430	8541.860	4894.880	8197.350
BEDS_AN	421.940	386.900	1115.440	455.520	1596.880
RWPS_TOT	7326.200	6912.900	19312.500	7450.100	27430.600
Inputs					
COST_AVST	6733.000	11315.000	18527.000	7754.000	27874.000
COST_OPER	9461.000	9556.000	30819.000	10455.000	41198.000
COST_PERS	25340.000	25325.000	57454.000	25371.000	77956.000

Date: 07/29/90

AMEDD Hospitals

Measurements of Local Frontier for HDATA: HOSP
Type 3 : MEDDAC
Hospital 20 :
Date: 10/01/87

Frontier Hospitals

Type	2
Hospital	11
Date	10/01/87
Multiplier	-0.117

Outputs

AMBV_IP	219.700
AMBV_OP	4614.320
BEDS_AN	498.950
RWPS_TOT	7884.600

Inputs

COST_AVST	7892.000
COST_OPER	10048.000
COST_PERS	28975.000

Date: 07/29/90

AMEDD Hospitals

Measurements of Local Frontier for HDATA: HOSP
Type 3 : MEDDAC
Hospital 21 :
Date: 10/01/87

Frontier Hospitals

Type	1	2	2	2	2
Hospital	6	11	17	15	12
Date	10/01/87	10/01/87	10/01/87	10/01/87	10/01/87
Multiplier	-0.024	-2.091	2.756	-2.058	1.723
Outputs					
AMBV_IP	2340.280	219.700	239.150	206.790	3 030
AMBV_OP	8541.860	4614.320	4894.880	4108.710	6790 480
BEDS_AN	1115.440	498.950	455.520	352.220	619.040
RWPS_TOT	19312.500	7884.600	7450.100	5053.500	9462.200
Inputs					
COST_AVST	18527.000	7892.000	7754.000	6623.000	13427.000
COST_OPER	30819.000	10048.000	10455.000	834[illegible] 000	13410.000
COST_PERS	57454.000	28975.000	25371.000	18950.000	38401.000

Date: 07/29/90

AMEDD Hospitals

Measurements of Local Frontier for HDATA: HOSP
Type 3 : MEDDAC
Hospital 21 :
Date: 10/01/87

Frontier Hospitals

Type	2
Hospital	14
Date	10/01/87
Multiplier	-0.923

Outputs

AMBV_IP	313.650
AMBV_OP	4979.430
BEDS_AN	386.900
RWPS_TOT	6912.900

Inputs

COST_AVST	11315.000
COST_OPER	9556.000
COST_PERS	25325.000

Date: 07/29/90

AMEDD Hospitals

Measurements of Local Frontier for HDATA: HOSP
Type 3 : MEDDAC
Hospital 22 :
Date: 10/01/87

Frontier Hospitals

Type	2	1	2	2	2
Hospital	17	6	14	11	12
Date	10/01/87	10/01/87	10/01/87	10/01/87	10/01/87
Multiplier	0.787	-0.047	0.276	0.069	-0.352
Outputs					
AMBV_IP	239.150	2340.280	313.650	219.700	368.030
AMBV_OP	4894.880	8541.860	4979.430	4614.320	6790.480
BEDS_AN	455.520	1115.440	386.900	498.950	619.040
RWPS_TOT	7450.100	19312.500	6912.900	7884.600	9462.200
Inputs					
COST_AVST	7754.000	18527.000	11315.000	7892.000	13427.000
COST_OPER	10455.000	30819.000	9556.000	10048.000	13410.000
COST_PERS	25371.000	57454.000	25325.000	28975.000	38401.000

Date: 07/29/90

AMEDD Hospitals

Measurements of Local Frontier for HDATA: HOSP
Type 3 : MEDDAC
Hospital 22 :
Date: 10/01/87

Frontier Hospitals

Type	2
Hospital	15
Date	10/01/87
Multiplier	-0.121

Outputs

AMBV_IP	206.790
AMBV_OP	4108.710
BEDS_AN	352.220
RWPS_TOT	5053.500

Inputs

COST_AVST	6623.000
COST_OPER	8340.000
COST_PERS	18950.000

Date: 07/29/90

AMEDD Hospitals

Measurements of Local Frontier for HDATA: HOSP
Type 3 : MEDDAC
Hospital 23 :
Date: 10/01/87

Frontier Hospitals

Type	2	1	1	2	1
Hospital	17	6	4	15	1
Date	10/01/87	10/01/87	10/01/87	10/01/87	10/01/87
Multiplier	0.884	0.101	-0.065	-0.145	0.021
Outputs					
AMBV_IP	239.150	2340.280	1751.690	206.790	1653.580
AMBV_OP	4894.880	8541.860	5227.530	4108.710	7435.040
BEDS_AN	455.520	1115.440	1339.550	352.220	1242.100
RWPS_TOT	7450.100	19312.500	19025.600	5053.500	16636.200
Inputs					
COST_AVST	7754.000	18527.000	19507.000	6623.000	16294.000
COST_OPER	10455.000	30819.000	3657 000	8340.000	27725.000
COST_PERS	25371.000	57454.000	5928i.000	18950.000	64546.000

Date: 07/29/90

AMEDD Hospitals

Measurements of Local Frontier for HDATA: HOSP
Type 3 : MEDDAC
Hospital 23 :
Date: 10/01/87

Frontier Hospitals

Type	1
Hospital	2
Date	10/01/87
Multiplier	-0.029

Outputs

AMBV_IP	3113.790
AMBV_OP	8197.350
BEDS_AN	1596.880
RWPS_TOT	27430.600

Inputs

COST_AVST	27874.000
COST_OPER	41198.000
COST_PERS	77956.000

Date: 07/29/90

AMEDD Hospitals

Measurements of Local Frontier for HDATA: HOSP
Type 3 : MEDDAC
Hospital 24 :
Date: 10/01/87

Frontier Hospitals

Type	2	2	2	2	1
Hospital	17	11	14	15	6
Date	10/01/87	10/01/87	10/01/87	10/01/87	10/01/87
Multiplier	2.389	-1.728	-0.891	-1.871	0.014
Outputs					
AMBV_IP	239.150	219.700	313.650	206.790	2340.280
AMBV_OP	4894.880	4614.320	4979.430	4108.710	8541.860
BEDS_AN	455.520	498.950	386.900	352.220	1115.440
RWPS_TOT	7450.100	7884.600	6912.900	5053.500	19312.500
Inputs					
COST_AVST	7754.000	7892.000	11315.000	6623.000	18527.000
COST_OPER	10455.000	10048.000	9556.000	8340.000	30819.000
COST_PERS	25371.000	28975.000	25325.000	18950.000	57454.000

Date: 07/29/90

AMEDD Hospitals

Measurements of Local Frontier for HDATA: HOSP
Type 3 : MEDDAC
Hospital 24 :
Date: 10/01/87

Frontier Hospitals

Type	2
Hospital	12
Date	10/01/87
Multiplier	1.637

Outputs

AMBV_IP	368.030
AMBV_OP	6790.480
BEDS_AN	619.040
RWPS_TOT	9462.200

Inputs

COST_AVST	13427.000
COST_OPER	13410.000
COST_PERS	38401.000

Date: 07/29/90

AMEDD Hospitals

Measurements of Local Frontier for HDATA: HOSP
Type 3 : HEDDAC
Hospital 25 :
Date: 10/01/87

Frontier Hospitals

Type	1	2	1	2	1
Hospital	2	17	6	13	8
Date	10/01/87	10/01/87	10/01/87	10/01/87	10/01/87
Multiplier	-0.063	0.910	0.071	0.225	0.003
Outputs					
AMBV_IP	3113.790	239.150	2340.280	165.560	2569.970
AMBV_OP	8197.350	4894.880	8541.860	4295.140	8827.750
BEDS_AN	1596.880	455.520	1115.440	421.940	2517.770
RWPS_TOT	27430.600	7450.100	19312.500	7326.200	33005.800
Inputs					
COST_AVST	27874.000	7754.000	18527.000	6733.000	20713.000
COST_OPER	41198.000	10455.000	30819.000	9461.000	52382.000
COST_PERS	77956.000	25371.000	57454.000	25340.000	133383.000

Date: 07/29/90

AMEDD Hospitals

Measurements of Local Frontier for HDATA: HOSP
Type 3 : MEDDAC
Hospital 25 :
Date: 10/01/87

Frontier Hospitals

Type	2
Hospital	11
Date	10/01/87
Multiplier	-0.486

Outputs

AMBV_IP	219.700
AMBV_OP	4614.320
BEDS_AN	498.950
RWPS_TOT	7884.600

Inputs

COST_AVST	7892.000
COST_OPER	10048.000
COST_PERS	28975.000

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